National Food Policy Plan of Action and

Bangladesh Second Country Investment Plan

Nutrition-Sensitive Food Systems

Monitoring Report

September 2022

Food Planning and Monitoring Unit (FPMU)

Ministry of Food

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Acronyms

7FYP	Seventh Five Year Plan
ADB	Asian Development Bank
ADP	Annual Development Programme
AIIB	Asian Infrastructure Investment Bank
APA	Annual Performance Agreement
ANC	Antenatal Care
ASF	Animal Source Foods
AVC	Agricultural Value Chain
BAB	Bangladesh Accreditation Board
BADC	Bangladesh Agricultural Development Corporation
BAEC	Bangladesh Atomic Energy Commission
BAPA	Bangladesh Agro-Processors' Association
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University
BB	Bangladesh Bank
BBF	Bangladesh Breastfeeding Foundation
BBS	Bangladesh Bureau of Statistics
BCC	Behaviour Change Communication
BCIC	Bangladesh Chemical Industries Corporation
BFVAPEA	Bangladesh Fruits, Vegetables and Allied Products Exporting Association
BIHS	Bangladesh Integrated Household Survey
BIGD	BRAC Institute of Governance and Development
BDHS	Bangladesh Demographic and Health Survey
BDT	Bangladeshi Taka
BFD	Bangladesh Forest Department
BFRI	Bangladesh Fisheries Research Institute
BFSA	Bangladesh Food Safety Authority
BFoRI	Bangladesh Forest Research Institute
BINA	Bangladesh Institute of Nuclear Agriculture
BIRDEM	Bangladesh Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorders
BIRTAN	Bangladesh Institute of Research and Training on Applied Nutrition
BJRI	Bangladesh Jute Research Institute
BLRI	Bangladesh Livestock Research Institute
BMDA	Barind Multipurpose Development Authority
BMS	Breast-Milk Substitutes
BNNC	Bangladesh National Nutrition Council
BRACU	BRAC University
BRRI	Bangladesh Rice Research Institute
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSRI	Bangladesh Sugar-crop Research Institute
BSTI	Bangladesh Standards and Testing Institution
BWDB	Bangladesh Water Development Board
CARS	Centre for Advanced Research in Sciences
CGAP	Consultative Group to Assist the Poor
CGE	Computable General Equilibrium
CIP	Country Investment Plan
CIP1	First Country Investment Plan
CIP2	Second Country Investment Plan
CPI	Consumer Price Index
CRA	Climate Resilient Agriculture
CSA	Climate Smart Agriculture
CSAIP	Climate Smart Agriculture Investment Plan
CSOs	Civil Society Organisations
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DANIDA	Danish International Development Agency
DAP	Diammonium phosphate
DDM	Department of Disaster Management
DEI	Dietary Energy Intake
DES	Dietary Energy Supply
DFID	Department for International Development
DG	Director-General
DGHS	Directorate General of Health Services
DLS	Department of Livestock Services
DoF	Department of Fisheries
DPs	Development Partners
DPHE	Department of Public Health Engineering
EBF	Exclusive Breastfeeding
EEZ	Exclusive Economic Zone
EGPP	Employment Generation Programme for the Poorest
ERD	Economic Relations Division
EU	European Union

FAO	Food and Agriculture Organization of the United Nations
FCTs	Food Composition Tables
FIES	Food Insecurity Experience Scale
FLI	Food Loss Index
FWI	Food Waste Index
FLW	Food Loss and Waste
FNS	Food and Nutrition Security
FPMC	Food Planning and Monitoring Committee
FPMU	Food Planning and Monitoring Unit
FPWG	Food Policy Working Group
FSC	Food Security Cluster
FSMS	Food Safety Management System
FSNIS	Food Security and Nutrition Information System
FSNSP	Food Security Nutritional Surveillance Project
FSS	Food Security Sector
FYP	Five Year Plan
G-K	Ganges-Kobadak
G2P	Government-to-Person
GAFSP	Global Agriculture & Food Security Program
GAIN	Global Alliance for Improved Nutrition
GAP	Good Agricultural Practices
GAqP	Good Aquaculture Practices
GDP	Gross Domestic Product
GED	General Economics Division
GEF	Global Environmental Facility
GHG	Green House Gas
GHO	Global Health Observatory
GHP	Good Hygienic Practices
GIEWS	Global Information and Early Warning System on Food and Agriculture
GIS	Geographic Information System
GM	Genetically Modified
GMP	Good Manufacturing Practices
GoB	Government of Bangladesh
HACCP	Hazard Analysis and Critical Control Points
HKI	Helen Keller International.
HIES	Household Income and Expenditure Survey
HPNSP	Health, Population and Nutrition Sector Programme
IBRD	International Bank for Reconstruction and Development
ICN2	Second International Conference on Nutrition
ICT	Information and Communication Technology
ICVGD	Investment Component for Vulnerable Group Development
IDA	International Development Association
IDB	Inter-American Development Bank
IDF	International Diabetes Federation
IFAD	International Fund for Agriculture Development
IFC	International Finance Corporation
IFPA	Indicator of Food Price Anomalies
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization
IMED	Implementation Monitoring and Evaluation Division
IMF	International Monetary Fund
INFS	Institute of Nutrition and Food Science
INGO	International Non-Governmental Organisation
IPC	Integrated Food Security Phase Classification
IPH	Institute of Public Health
IPHN	Institute of Public Health and Nutrition
IRRI	International Rice Research Institute
IYCF	Infant and Young Child Feeding
JICA	Japan International Cooperation Agency
LANSA	Leveraging Agriculture for Nutrition in South Asia
LCG	Local Consultative Group
LDDP	Livestock and Dairy Development Project
LCG ARDF	Local Consultative Group in Agriculture, Rural Development and Food Security
LGD	Local Government Division, Ministry of Local Government, Rural Development and Co-operatives
LGED	Local Government Engineering Department
LoA	Letter of Agreement
MAD	Minimum Acceptable Diet
MBM	Meat and Bone Meal
MDD	Minimum Dietary Diversity
MDD-W	Minimum Dietary Diversity for Women
MDER	Minimum Dietary Energy Requirements
MDG	Millennium Development Goal
MFSP	Modern Food Storage Facilities Project
MICS	Multiple Indicator Cluster Survey
MIS	Management Information System
MISM	Management Information System and Monitoring
MoEFCC	Ministry of Environment, Forest and Climate Change

MMF	Minimum Meal Frequency
MMT	Million Metric Tons
MoA	Ministry of Agriculture
MoDMR	Ministry of Disaster Management and Relief
MoF	Ministry of Finance
MoFood	Ministry of Food
MoFL	Ministry of Fisheries and Livestock
MoHFW	Ministry of Health and Family Welfare
MoI	Ministry of Industries
MoInfo	Ministry of Information
MoLGRDC	Ministry of Local Government, Rural Development and Cooperatives
MoP	Muriate of Potash
MoU	Memorandum of Understanding
MoWCA	Ministry of Women and Children Affairs
MoWR	Ministry of Water Resources
MPI	Multidimensional Poverty Index
MR19	CIP2 Monitoring Report 2019
MR20	CIP2 Monitoring Report 2020
MSMEs	Micro, Small and Medium Enterprises
MUCH	Meeting the Undernutrition Challenge
NAES	National Agriculture Extension System
NAP	National Agricultural Policy
NATP II	National Agriculture Technology Project – phase II
NARS	National Agricultural Research System
NBCC	Nutrition Behaviour Change Communication
NC	National Committee
NCDs	Non-Communicable diseases
NFPCSP	National Food Policy Capacity Strengthening Programme
NFNSP	National Food and Nutrition Security Policy
NFP	National Food Policy
NGOs	Non-Governmental Organizations
NIPN	National Information Platform for Nutrition
NIPU	Nutrition Information and Planning Unit
NMSS	National Micronutrient Status Survey
NPAN2	Second National Plan of Action for Nutrition
NNC	National Nutrition Council
NNP	National Nutrition Policy
NNS	National Nutrition Services
NNW	National Nutrition Week
NO	Nutritional Olympiad
NSA	Nutrition-Sensitive Agriculture
NSDS	National Strategy for the Development of Statistics
NSPCMD	National Strategy on Prevention and Control of Micronutrient Deficiencies
NSVC	Nutrition-Sensitive Value Chain
NWRD	National Water Resources Database
OPHI	Oxford Poverty and Human Development Initiative
PFDS	Public Food Distribution System
PKSF	Palli Karma-Sahayak Foundation
PNC	Post-natal Care
PoA	Plan of Action
PoU	Prevalence of Undernourishment
PPP	Public Private Partnership
ppm	Parts per million
PPRC	Power and Participation Research Centre
RAKUB	Rajshahi Krishi Unnayan Bank
REVA	Refugee influx Emergency Vulnerability Assessment
RMG	Ready-made garment
SAARC	South Asian Association of Regional Cooperation
SBN	SUN Business Network
SDC	Swiss Agency for Cooperation and Development
SDG	Sustainable Development Goal
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
SME	Small and Medium Enterprise
SOFI	State of Food Insecurity in the World
SRDI	Soil Resource Development Institute
SSN	Social Safety Net
SSNP	Social Safety Net Programmes
SUN	Scaling Up Nutrition
TAT	Technical Assistance Team
TMRI	Transfer Modality Research Initiative
TSP	Triple Superphosphate
TT	Thematic Team
TWG	Technical Working Group
UDP	Urea Deep Placement
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNIDO	United Nations Industrial Development Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	US Dollar
VGD	Vulnerable Group Development
VGF	Vulnerable Group Feeding
VRA	Vulnerability Risk Assessment

WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organization
WIBCI	Weather Index-Based Crop Insurance

Executive Summary

Progress towards the CIP2 Results

The Bangladesh Second Country Investment Plan– Nutrition-Sensitive Food Systems (CIP2, 2016-2020) lays out a coherent set of nutrition-sensitive programmes. The Monitoring Report 2022 (MR22) analyses progress in the CIP2 up to June 30th 2021, four years into the implementation of the CIP2. Cross-sectoral resource mobilisation is assessed against national priorities as outlined in the Bangladesh Seventh Five Year Plan. This process is aligned with the related SDG 2- Zero Hunger. Because the CIP2 is a living document, this monitoring report, to the extent possible, has tried to consider the likely impacts of COVID19 pandemic against the CIP2 and SDG targets.

Progress towards the CIP2 Goal

Moderate and Severe Food Insecurity in the population is decreasing, however Prevalence of Undernourishment (PoU) has increased

PoU is an estimate of the proportion of the population that lacks enough dietary energy for a healthy, active life. It is FAO's traditional indicator used to monitor hunger at the global and regional level, as well as SDG Indicator 2.1.1. It considers the mean food consumption and its variability and asymmetry against a normative requirement: the Minimum Dietary Energy Requirements (MDER) of the average individual in a given sex and age group. The PoU in Bangladesh is estimated at 13.0% over 2017-19 and 11.4% over 2019-2021, following a declining - albeit a slow and decelerating trend since the CIP2 baseline. However, the 10% target set by the General Economics Division of the Planning Commission is still attainable (Table 1), although the COVID-19 pandemic and present conflict between Ukraine and Russia may dampen the progress observed.

Significant Progress in the reduction of child undernutrition

Considering nutrition situation, Bangladesh has achieved a remarkable progress in child undernutrition among the most rapid worldwide. Stunting (or low height for age, SDG indicator 2.2.1) is caused by inadequate nutrition (not eating enough or eating foods that lack growth-promoting nutrients) and recurrent infections or chronic diseases which cause poor nutrient intake, absorption or utilisation since and before birth. The indicator is a reflection of poor environmental conditions (e.g. lack of safe water, inadequate access to excreta disposal facilities, and general poor living conditions) and long-term restrictions of the growth potential, which in turn translate into reduced learning potential and productive capacity. Bangladesh's prevalence of stunting among children under 5 years of age reduced to 30.8% in 2018 from 36.1% in 2014 and from 60% in mid-1990s. This trend shows improvement by the Multiple Indicator Cluster Survey (MICS) 2019 data with stunting further declining to 28%. This trend makes reaching the 7FYP target of 25% by 2020 seem feasible.

Important role of parental education and wealth accumulation on nutritional outcomes

Studies on the determinants of child growth using the Bangladesh Demographic and Health Surveys (BDHS) from 1997 to 2014 found that household wealth accumulation and parental education were the key drivers of the rapid reduction of undernutrition - especially in severe child stunting. Health, sanitation and demographic factors played significant but secondary roles. The determinants of wealth accumulation include pro-poor economic growth and rapid agricultural growth, off-farm diversification, labour-intensive manufacturing, and overseas workers' remittances (15.5 billion USD in 2018, up 15% from 2017), which is much higher than foreign direct investment (about 3 billion USD in 2018). With regards to maternal education, the prevalence of stunting was 18% amongst children whose mother had secondary

education compared to 47% whose mother had no formal education. Paternal education appears to be as important as maternal education, for lower child undernutrition, higher food security, improved toilet facilities and better nutritional status and awareness of child's undernutrition status.

COVID-19 pandemic might negatively impact progress towards the CIP2 goal

A PPRC and BIGD Rapid Response Survey on the Poverty Impact of COVID-19 (April 2020) registered a reduction of more than 70% in the income of the extreme poor, vulnerable non-poor and moderate poor within the first week of lockdown (26 March 2020). This translated in a 40% and 35% per capita food expenditure reduction for the poor and vulnerable non-poor, respectively. A likely coping strategy will be to substitute more expensive and nutritious foods with staples, favouring caloric over micronutrient intake, which will undermine recent progress in diet diversification and nutrition outcomes. This, however, is likely to be transitory and could be mitigated by the availability of affordable protein-rich foods such as milk, chicken broilers and eggs. Thus, in responding to COVID-19, it will be essential to integrate nutrition considerations into emergency response and recovery and to prioritise the needs of the most vulnerable. To this end, social protection measures providing direct food support should be considered.

Progress in the CIP2 Outcomes

Outcome I. Accelerate agricultural growth and resilience through climate-smart investments

It now needs to accelerate the shift towards high-value agriculture, including horticulture, livestock, and fisheries as well as greater value addition to improve farmers' income and household nutrition. More recently, the positive trend in agricultural GDP growth rate culminated in the attainment of rice self-sufficiency and allowed the start of a structural, but slow, transformation towards diversification in production -especially towards poultry, fisheries and aquaculture. The FAO Climate-Smart Agriculture (CSA) approach is useful to reorient agriculture systems towards climate change resilience while maintaining the focus on productivity, sustainable food and nutrition security. CSA interventions ensure increased productivity, strengthened climate resilience and reduced greenhouse gas emissions from agriculture.

The transition to a climate-resilient growth path is the only option to ensure that long term key agriculture development targets are met. By 2040, the current degree of sea-level rise may reduce available cropland by 24% in coastal divisions across growing seasons. Greater economic activity is expected to trigger +2% of greenhouse gas (GHG) emissions over the period 2015-2040 and to increased water consumption by 0.8-1.7 million litres per year, exacerbating water scarcity. CSA offers growth potential of more than 50% over 2015 levels for non-rice crops, livestock and fisheries.

A key factor in adequate CSA adoption is its mainstreaming into core policy frameworks, as various sectors in Bangladesh are affected by climate change. The Bangladesh Delta Plan 2100 represents the combination of long-term cross-sectoral strategies and subsequent interventions to ensure food and water security, economic growth and environmental sustainability while reducing vulnerability to natural disasters and building resilience to climate change. This, notwithstanding the effects of the COVID-19 crisis, should contribute to helping Bangladesh reach the upper-middle income country status by 2030 and the high-income country status by 2041, as stated in Vision 2041.

Outcome II. The Consumer Price Index declined but achieved the target for 2021

The average annual Consumer Price Index (CPI) inflation rate measures the change in the price of a set of essential commodities over a base year. In the FY 2020/21 CPI inflation rate declined to 5.6% from 5.65% in 2019/20 whereas achieved the target of 5.40% for 2021. Effective coordination between fiscal and monetary authorities reflected in timely wane of tariffs, policy-led bountiful agricultural production in the country and reduction of LoC margin on import of essential food commodities have contributed significantly to this achievement.

General inflation hit a record high in both 2007/08 and 2010/11 due to the upsurge in food prices triggered by the international food price hike. Food inflation remained higher than non-food inflation - except in 2011/12 and 2015/16. Over the last decade, both food and non-food inflation have been volatile but converged in 2018/19. However, a bit diverged condition has been observed again in 2019/20 when food and non-food inflation exist at 5.56% and 5.85% whereas in the FY 2020/21, the rate was 5.73% and 5.29% respectively. This is the result of a year-on-year decline in food inflation and an increase in non-food inflation.

Outcome III: The Minimum Acceptable Diet (MAD) is one of the eight core indicators for assessing infant and young child feeding (IYCF) practices for children aged 6-23 months recommended by WHO and UNICEF.

Recent preliminary findings from the National Micronutrient Survey 2019-2020 shows that a improve situation in Minimum Acceptable Diet to 35.5% in 2019-20 from 27% in 2019 MICS Survey. BDHS surveys show clear progress in children receiving MAD between 2011 and 2017/18 (Figure 10) although most of the progress occurred between 2014 and 2017/18 from 23% to 34%.

However, MICS-2019 Survey shows that 27% of children 6-23 are receiving Minimum Acceptable Diet (MAD), whereas the target of MAD is 40% by 2025 as per the NPAN2.

The MAD is a composite indicator of the Minimum Dietary Diversity (MDD) and the Minimum Meal Frequency (MMF). The MDD is a proxy indicator for nutrient density and micronutrient adequacy, while the MMF is a proxy indicator for the energy density in a child's diet. Despite improvements for both MDD and MMF in children's diets between 2011 and 2017, only 39% of the children aged 6-23 months received four or more food groups to meet the Minimum Dietary Diversity, while over three-quarters of them had the Minimum Meal Frequency (Figure 10). However, it is likely that these improvements may have been negatively impacted in the COVID-19 situation. The initial lockdown and subsequent restricted movement affected employment and incomes which in turn have reduced the access to a diversified range of foods needed for healthy diets, especially among women and young children. Poor IYCF leads to growth retardation and micronutrient deficiencies among children, especially when linked to low diet diversification and nutrient inadequacy in complementary feeding. Appropriate complementary feeding guidelines and improved nutrient-dense recipes through National Nutrition Services (NNS) should be promoted to enhance the quality, quantity, diversity and safety of complementary foods to improve child nutrition in the first 1,000 days of life.

Outcome IV: Poverty reduction was on-track for the SDG 1 national target, but will likely be slowed by COVID-19

Poverty in 2018/19 was estimated by the Bangladesh Bureau of Statistics (BBS) to have further declined to 20.5% nationally, from 21.8% in the previous year. These figures are 10.5% and 11.3%, respectively, for the proportion of people under the extreme poverty line. Poverty estimates after the baseline are model-based, rather than survey-based, by extrapolating a linear trend between survey-based estimates in 2010

and 2015/16 (Figure 12). Even with a somewhat slower rate of decline after 2010, Bangladesh was still on-track to achieve before 2030, the SDG 1 Target 1.2.1 of reducing at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

The lockdown resulting from the COVID-19 pandemic in 2020 led to sharp increases, in poverty depth amongst the already poor, and in poverty prevalence when previously non-poor households fell into poverty. The transitory shock turned into a longer-term crisis in poor households when the lockdown period. Many of the poor would rebound with the resumption of economic activity, but some would remain poor because they sold productive assets, accumulated unmanageable debts, were unable to re-finance migrant work, and even for some, their breadwinner died. An analysis conducted by BRAC in April 2020 across subgroups demonstrates that the hardest hit by the COVID-19 crisis are the poorest and most marginalized - children, adolescent girls, young people and women living in urban slums, persons with disabilities, minorities, returnee migrants and refugee camps inhabitants.

Outcome V: The institutional setup to monitor FNS is established and functional

Institutions and platforms to monitor FNS progress are working commendably. The CIP2 monitoring occurs yearly and the new National Food and Nutrition Security Policy has been approved. The policy landscape in FNS is fast evolving and new challenges are emerging all the time.

This calls for appropriate and versatile capacities to handle analyses of changes. Strengthened enabling environment and cross-cutting programmes for achieving food and nutrition endeavours to create the right environment for this to happen. In particular, it recommends that ensuring the existence of analytical and monitoring capacities within the government in the context of an ever-changing FNS context be institutionalized rather than rely on piecemeal capacity strengthening projects. Furthermore, it is key that the political commitment to ensuring FNS translates into concrete actions both for the government and for development partners to allow effective participation of all stakeholders in the processes in place and efficient processes. Achievement of the CIP2 goal and SDG 2 requires contributions from all the food system's stakeholders – from Civil Society Organisations (CSOs) to academia and the private sector. Creating an environment that encourages non-state actors to participate in FNS-related policy and strategy development is key.

A few achievements may be slowed by the effects of the COVID-19 crisis

At the time of preparing this report, after the GoB declared a lockdown to contain the spread of COVID-19 on the 26th March 2020, the measures had started affecting the food supply chain and agricultural production. Due to the restrictions in movement, smallholders and food producers, often women, were negatively impacted due to limited access to their land and markets to buy inputs and sell their produce. The food industry needs to be treated as an essential service provider to ensure continuity of operations along food value chains through the establishment of 'green channels' and providing both direct - through cash or in-kind transfers to sustain rural livelihood and indirect support through facilitated loan schemes and grants.

1. Introduction

Nutrition-sensitive food systems

Bangladesh has achieved unprecedented results in recent decades in terms of economic growth, poverty reduction and food and nutrition security (FNS). However, factors such as its population size and density, land degradation, climate change and the acceleration in the frequency of natural disasters, unbridled rural-to-urban migration leading to a concentration of poor and malnourished individuals in urban slums, and the so-called triple burden of malnutrition, leave no room for complacency. It is against this backdrop that the Government of Bangladesh's Second Country Investment Plan – Nutrition-Sensitive Food Systems (CIP2 2015-2021) was prepared. The goal of the CIP2 is 'to achieve improved food security and nutrition for all at all times by making food systems[1] nutrition-sensitive and sustainable. Its strategic objectives are to ensure: the availability, affordability and nutritional quality of foods; that all people have access to a variety of safe and nutritious foods; and the availability of knowledge to be able to make healthy diet choices'. It aims to improve nutrition outcomes and wellbeing with a focus on mothers and children, especially in their first 1,000 days of life, by shaping food systems through the promotion of nutrition-sensitive investments. The CIP2 comprises five investment Pillars (Figure 1):

I. Diversified and sustainable agriculture, fisheries and livestock for healthy diets
II. Efficient and nutrition-sensitive post-harvest transformation and value addition
III. Improved dietary diversity, consumption and utilisation
IV. Enhanced access to social protection and safety nets and increased resilience
V. Strengthened enabling environment and cross-cutting programmes for achieving food and nutrition security

The CIP2 is a flexible tool which can leverage financial resource allocation to fulfil the objectives of the Seventh Five Year Plan (7FYP, 2016-2020) and SDGs while coping with unexpected exigencies such as the likely impact of COVID-19 on FNS. The Monitoring Report 2022 (MR 22) is the fourth yearly monitoring exercise of the CIP2. This monitoring exercise is a joint effort of 19 ministries/divisions' agencies and departments led by the Ministry of Food's Food Planning and Monitoring Unit (FPMU). It tracks FNS progress and assesses it against CIP2 and SDGs targets, and it monitors FNS-related investments and commitments as of June 30th, 2021. The MR 22 also analyses the current policy developments. These dimensions are addressed within their relevant investment Pillar, programme and sub-programme, with each achievement contributing to the final CIP2 goal (Figure 1).

Accordingly, the likely impacts of COVID-19 pandemic on FNS are considered in the MR22. This crisis adversely affected development, potentially slowing down, or even temporarily reversing, some of the gains made in FNS. When preparing this report, the full extent of the ongoing COVID-19 pandemic and its impact in Bangladesh were still largely unknown. As of April 2020, the IMF forecasted the global economy would contract by -3% in 2020, although in developing Asia, growth of 1% was still forecasted.[2] The South Asia region was expected to grow by 3% in 2020, its worst performance in 40 years.[3] Food and agriculture *supply* channels - primary production, processing, trade and logistics - and *demand* channels - exchange rates, energy and credit markets – were affected at both global and national level.[4] While it is difficult to assess the depth and duration of the impact, in Bangladesh, poor people are likely to be the most affected.

[1] Food systems include all the elements involved in bringing food to consumers from farm to fork, as well as all the processes and infrastructure involved: 'growing, harvesting, packing, processing, transforming, marketing, consuming and disposing of food'.
[2] IMF (2020). *World Economic Outlook, April 2020: The Great Lockdown*. Washington, DC. International Monetary Fund.
[3] World Bank (2020) Public Banks. *South Asia Economic Focus.* April. Washington, DC. World Bank.
[4] Schmidhuber, J., Pound, J. & Qiao, B. (2020) *COVID-19: Channels of transmission to food and agriculture*. Rome. FAO.

In light of this global health crisis unfolding as it is being prepared, the report has had to adjust some of its recommendations for further actions.

Structure of this report

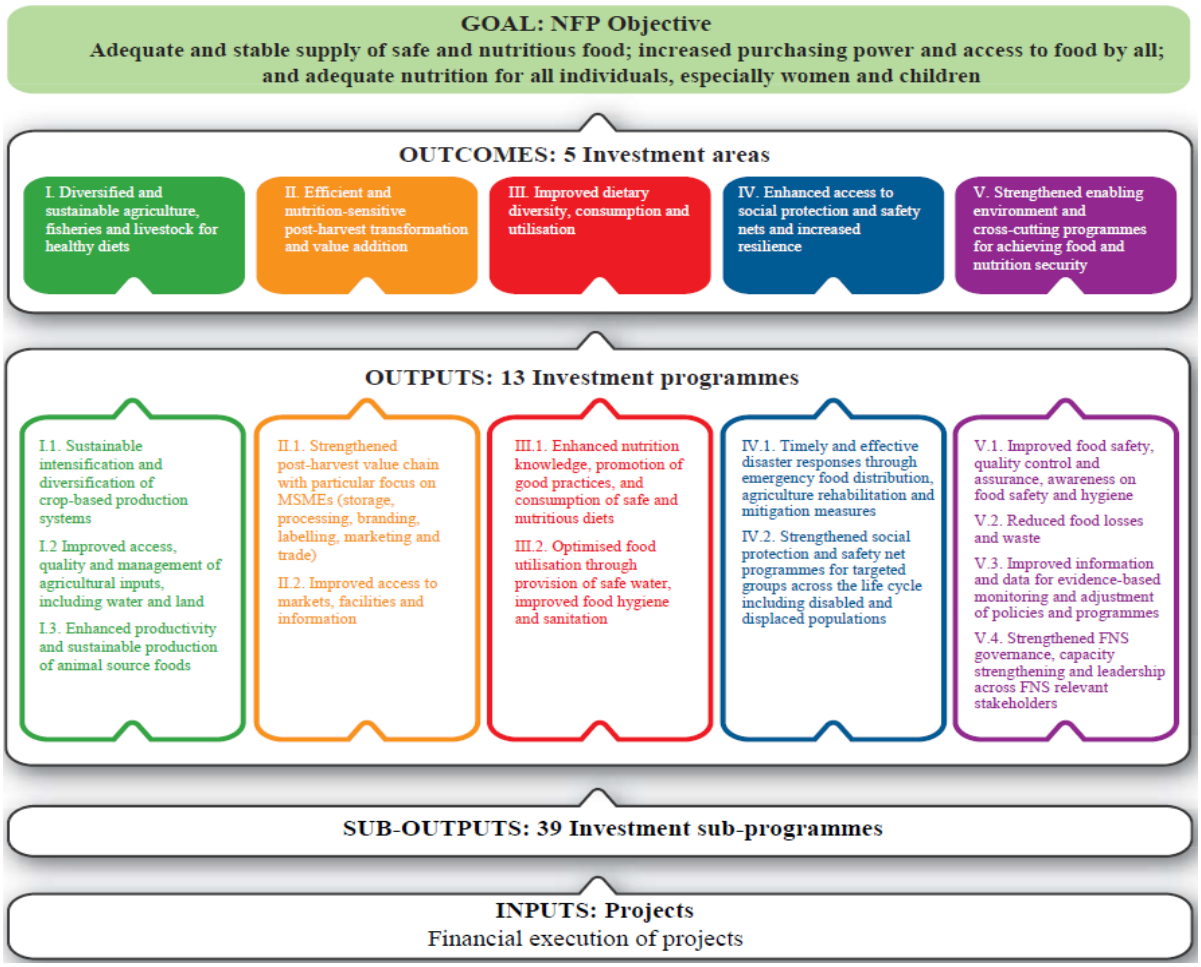
The methodological approach to the monitoring and its results framework are presented in Chapter 2. Goal and outcome level indicators are discussed in Chapter 3, while Chapter 4 to 8 discuss each of the five Pillars in turn, analysing their respective outcomes and related programmes. Chapter 9 summarizes the assessment of progress and recommendations.

2.Approach to monitoring

The methodological approach of this MR22 is based on the CIP2 results framework.[5] Project-level investments in the CIP2 count as inputs in its results framework and these inputs are expected to generate output-level results, that collectively contribute to outcome-level results, which ultimately lead to the CIP2 goal. The report monitors results at each of these four levels: input, output, outcome and goal (Figure 1):

- Goal level monitoring assesses progress towards CIP2 goals.
- Outcome level monitoring look at progress towards results to which projects in the investment plan are expected to contribute collectively, but not directly or individually – and for this, five expected outcomes are monitored corresponding to the five Pillars of the CIP2.
- Output level monitoring examines results expected from projects under the direct control of implementing agencies across 13 programmes that support the five Pillars of the CIP2.

Figure 1 - CIP2 Results Framework



Source: FPMU, Ministry of Food

[5] See Annex 1 for the list of results indicators and how they have evolved from the CIP2 in MR19 and MR20.

The monitoring of CIP2 and SGD 2 -Zero Hunger: a unified institutional arrangement

The institutional arrangement for monitoring the CIP2 is the one set up for the National Food Policy 2006 and the first Bangladesh Country Investment Plan (CIP1, 2011-15). It serves to help monitor SDG 2 - Zero Hunger and other FNS-related SDG indicators[6] as well as the NPAN2 (2016-2025e) and to the new Bangladesh Food and Nutrition Security Policy (BFNSP). The institutional arrangement, depicted in Figure 2, includes five Thematic Teams (TTs)[7], eight Technical Working Groups (TWGs)[8], the Food Policy Working Group (FPWG), the National Committee (NC) and the Local Consultative Group on Agriculture, Rural Development and Food Security (LCG ARDFS), under the authority of the Food Planning and Monitoring Committee (FPMC) and with overall support from the Food Planning and Monitoring Unit (FPMU).[9]

- The Cabinet-level ***FPMC*** chaired by the Food Minister includes Ministers and Secretaries from FNS-related sectors. The FPMC delivers strategic guidance on FNS-related issues and establishes a high-level commitment to inter-sectoral collaboration. It provides leadership and oversight in the formulation of food policy strategic documents developed by the institutions it oversees.
- The ***NC***, chaired by the Food Minister, comprises the secretaries of key ministries and divisions, heads of universities/research institutions, Development Partners (DPs), private sector representatives and other non-governmental organisations (NGOs). The NC oversees the CIP implementation and monitoring processes.
- The ***FPWG***, chaired by the Food Secretary, performs the task of coordination and collaboration at both the technical and operational level. A particularly important role is played by the Ministry of Finance, and the Implementation Monitoring and Evaluation Division (IMED) of the Planning Commission (Ministry of Planning), and the Economic Relations Division (ERD) to provide information towards the CIP2 financial section.
- The ***TTs*** carry out the monitoring activities.
- The ***FPMU*** of the Ministry of Food provides technical, operational and secretarial support.
- The ***Local Consultative Group on Agriculture, Food Security and Rural Development (LCG ARDFS)*** participates in the CIP Annual Review process. The LCG ARDFS is the venue for dialogue between GoB and DPs. LCGs are designed to contribute towards effective and coordinated implementation of national policies, strategies, plans and programmes.

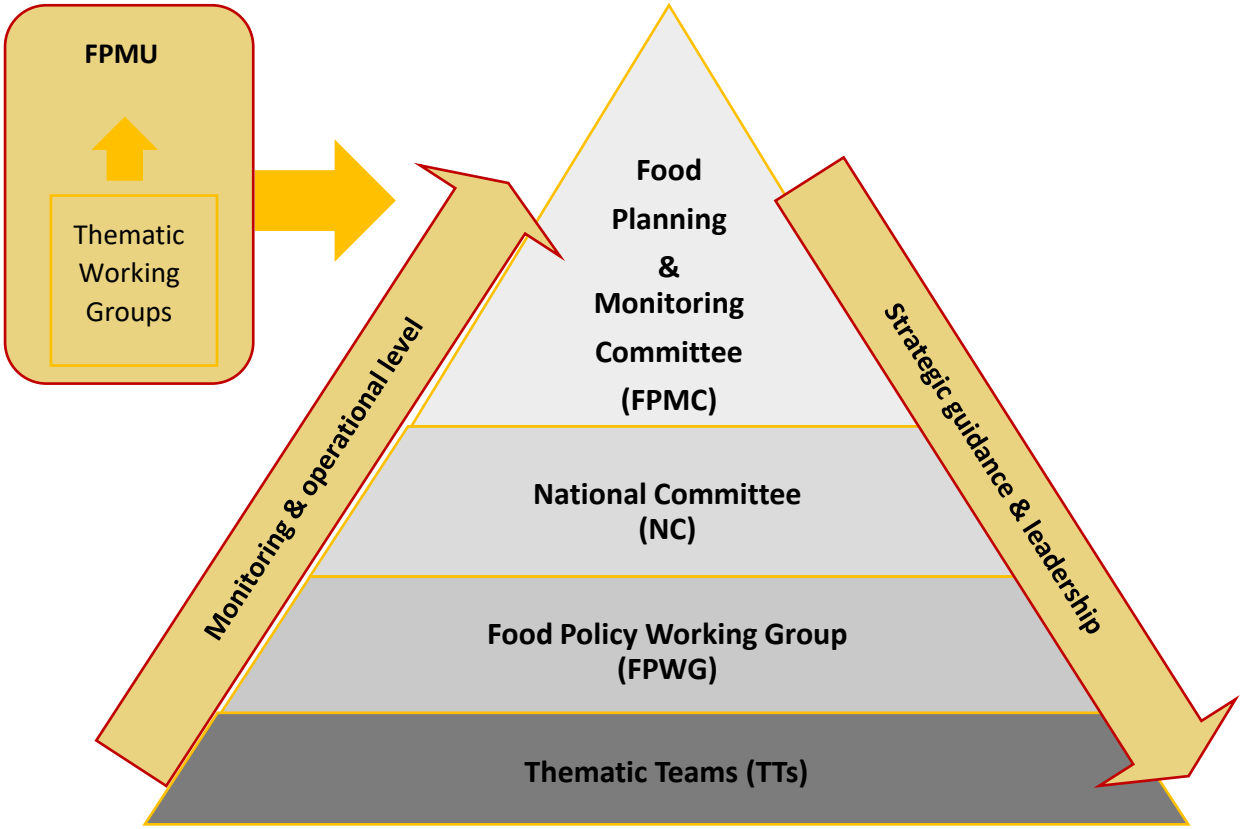
[6] CIP2 monitoring process analyses the following SDG indicators: 2.1.1, 2.1.2, 2.2.1, 2.2.2, 2.3.1; 2.c.1, 1.2.1, 6.4.1, 6.4.2, 6.1.1, 6.2.1 and 1.3.1.

[7] See Annex 3 for their composition.

[8] In addition to the CIP1 institutional setup, eight TWGs - focal points from each relevant GoB sector- have been established by FPMU in partnership with 13 ministries. These TWGs assisted FPMU in developing the CIP2.

[9] See Chapter 9 of GoB (2016) *Bangladesh Second Country Investment Plan: Nutrition Sensitive Food Systems (2016-2020)* Dhaka. FPMU. Ministry of Food.

Figure 2 - Institutional set up for CIP2 preparation and Zero Hunger monitoring



Source: FPMU, Ministry of Food

2.Progress towards CIP2 goal and outcomes

3.1 Progress towards CIP2 goal

The Sustainable Development Goal to '*End hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030'* (SDG 2 – Zero hunger) - provides an opportunity to rethink the way food is grown, accessed, shared and consumed. Hunger in the world is increasing to reach nearly 768 million in 2021[10,11] and this is expected to be dramatically worsened, at least temporarily, by the COVID-19 pandemic and the conflicts between Russia and Ukraine. In some regions, natural resources to produce food are becoming scarce under competing uses and are threatened by natural calamities. It is measured through five proxy indicators (Table 1): Prevalence of Undernourishment (SDG 2.1.1); Food Insecurity Experience Scale (SDG 2.1.2); Prevalence of Stunting (SDG 2.2.1); Prevalence of Wasting (SDG 2.2.2); and Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size (SDG 2.3.1).

Table 1 - CIP2 goal and 7FYP indicators relating to food and nutrition security

CIP2 goal proxy indicators	2015/16 Baseline	2018/19	2019/20	2020/21	Target	Source
SDG Indicator 2.1.1: Prevalence of Undernourishment (PoU)[12]	14.9% R (2014-16)	13.0% (2017-19)	9.7% (2018-20)	11.4 % (2019-21)	<10% by 2030 (GED[13])	FAO, SOFI and FAOSTAT
SDG 2.1.2: Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)[14]	32.2%/ 13.3% (2014-16)	31.5%/ 10.6% (2017-19)	31.9%/ 10.5% (2018-20)	31.7%/ 10.7% (2019-21)	Decreasing over time (FAO)	FAO, SOFI and FAOSTAT
SDG Indicator 2.2.1: Prevalence of stunting (height for age <-2 SD from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age	36.1% (2014)	31% (2017-18)	28% (2019)	-	20% by 2025 (8FYP)	BDHS MICS
SDG Indicator 2.2.2: Prevalence of wasting among children under 5 years of age (<-2 SD of weight for height)	14% (2014)	8.4 % (2017-18)	9.8% (2019)	-	<8% by 2025 (NPAN2)	BDHS MICS

**: Not available; R: revised*

[10] FAO, IFAD, UNICEF, WFP and WHO (2022) *The State of Food Security and Nutrition in the World 2022. Transforming food systems for affordable healthy diets*. Rome. FAO.

[11] A number of updates have been made in the data for several countries in this year's State of Food Security and Nutrition (SOFI) report in order to estimate world hunger with greater accuracy. This has resulted in a substantial downward shift of the number of undernourished series in the world, which explains the lower figures exposed here compared to MR19 for earlier years. The slow increasing trend in the number of people affected by hunger globally since 2014 is confirmed, however.

[12] Data for Bangladesh have also been updated in SOFI, explaining revised figures compared to MR19.

[13] GoB (2017) *Bangladesh Voluntary National Review (VNR) 2017 – Eradicating poverty and promoting prosperity in a changing world*. Dhaka. Planning commission. General Economics Division (GED).

[14] See footnote 14.

Moderate and Severe Food Insecurity in the population is decreasing, however Prevalence of Undernourishment (PoU) has increased

PoU is an estimate of the proportion of the population that lacks enough dietary energy for a healthy, active life. It is FAO's traditional indicator used to monitor hunger at the global and regional level, as well as SDG Indicator 2.1.1. It considers the mean food consumption and its variability and asymmetry against a normative requirement: the Minimum Dietary Energy Requirements (MDER) of the average individual in a given sex and age group[15,16]. The PoU in Bangladesh is estimated at 13.0% over 2017-19 and 11.4% over 2019-2021, following a declining - albeit a slow and decelerating trend since the CIP2 baseline. However, the 10% target set by the General Economics Division of the Planning Commission is still attainable (Table 1), although the COVID-19 pandemic and present conflict between Ukraine and Russia may dampen the progress observed. Indeed, it is expected that the crisis will reverse the gains made in nutrition improvement and impact the most vulnerable first and hardest. The COVID-19 crisis has made it clear that inequity is a maker and a marker of malnutrition.[17]

The Prevalence of Moderate or Severe Food Insecurity based on the Food Insecurity Experience Scale (FIES) provides an alternative household-level perspective by assessing people's perceptions and challenges in accessing nutritious and sufficient food.[18] On this scale, severe food insecurity, for example, indicates no food for a day or more (Figure 3). The three-year average of moderate food insecurity for 2019-21 has declined at 31.7% compared to 31.9% for 2018-20. Severe food insecurity, based on the FIES, has improved, falling steadily to 10.7% in 2019-21 from 13.3% in 2014-16. Although, the severe food security was 10.5% in 2018-20. These figures are noticeably below the South Asia averages, which stand at 18.8% for severe food insecurity and 39.4% for moderate food insecurity over 2017-19, respectively.[19] Given the potential impact of the COVID-19 crisis on food security, it is advisable to conduct the FIES survey, which has now been adapted to capture such effects[20].

Source: FAO, 2020

Figure 3 - Food Insecurity based on the FIES: what does it mean?

[15] FAO (2014) *Refinements to the FAO methodology for estimating the Prevalence of Undernourishment indicator*. *FAO Statistics Division Working Paper Series.* ESS/14-05. September.

[16] Following the FAO methodological approach, normative requirements are based on the Basic Metabolism Rate (BMR) per kilogram of body mass, multiplied by the ideal weight of a healthy person given their height, and multiplied by a coefficient of Physical Activity Level which factors-in physical activity.

[17] Development Initiatives. *2020 Global Nutrition Report: Action on equity to end malnutrition*. Bristol. UK.

[18] During the last 12 months, was there a time when, because of lack of money or other resources: 1. You were worried you would not have enough food to eat? 2. You were unable to eat healthy and nutritious food? 3. You ate only a few kinds of foods? 4. You had to skip a meal? 5. You ate less than you thought you should? 6. Your household ran out of food? 7. You were hungry but did not eat? 8. You went without eating for a whole day?

[19] FAO, IFAD, UNICEF, WFP and WHO (2022) *The State of Food Security and Nutrition in the World 2022. Transforming food systems for affordable healthy diets*. Rome, FAO.

[20] FAO (2020) *Using the Food Insecurity Experience Scale (FIES) to monitor the impact of COVID-19*. Rome.

Significant Progress in the reduction of child undernutrition

Considering nutrition situation, Bangladesh has achieved a remarkable progress in child undernutrition among the most rapid worldwide.[21] Stunting (or low height for age, SDG indicator 2.2.1) is caused by inadequate nutrition (not eating enough or eating foods that lack growth-promoting nutrients) and recurrent infections or chronic diseases which cause poor nutrient intake, absorption or utilisation since and before birth. The indicator is a reflection of poor environmental conditions (e.g. lack of safe water, inadequate access to excreta disposal facilities, and general poor living conditions) and long-term restrictions of the growth potential[22], which in turn translate into reduced learning potential and productive capacity. Bangladesh's prevalence of stunting among children under 5 years of age reduced to 30.8% in 2018 from 36.1% in 2014 and from 60% in mid-1990s. This trend shows improvement by the Multiple Indicator Cluster Survey (MICS) 2019 data with stunting further declining to 28%.[23,24] This trend makes reaching the 7FYP target of 25% by 2025 seem feasible.

The prevalence of wasting (or low weight for height, SDG indicator 2.2.2) reflects short-term undernutrition i.e. acute weight loss, due to inadequate dietary intake, infections and diseases (mainly diarrhoea). Wasting among children under 5 years of age has dropped to 9.4 % in 2019 from 14% in 2014 and is aligned with the NPAN2 2025 target of 8%. In line with stunting rates, child wasting was the highest in Sylhet and the lowest in Dhaka division.[25]

Important role of parental education and wealth accumulation on nutritional outcomes

Studies on the determinants of child growth using the Bangladesh Demographic and Health Surveys (BDHS) from 1997 to 2014 found that household wealth accumulation and parental education were the key drivers of the rapid reduction of undernutrition - especially in severe child stunting. Health, sanitation and demographic factors played significant but secondary roles.[26] The determinants of wealth accumulation include pro-poor economic growth and rapid agricultural growth, off-farm diversification, labour-intensive manufacturing, and overseas workers' remittances (15.5 billion USD in 2018, up 15% from 2017), which is much higher than foreign direct investment (about 3 billion USD in 2018[27]). With regards to maternal education, the prevalence of stunting was 18% amongst children whose mother had secondary education compared to 47% whose mother had no formal education.[28] Paternal education appears to be as important as maternal education, for lower child undernutrition, higher food security, improved toilet facilities and better nutritional status and awareness of child's undernutrition status.[29]

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[21] Headey, D., Hoddinott, J., Ali, D., Tesfaye, R. & M. Dereje (2015) *The Other Asian Enigma: Explaining the Rapid Reduction of Undernutrition in Bangladesh*. *World Development*. Volume 66.

[22] WHO. *The Global Health Observatory*.

[23] While MICS data are not fully comparable with BDHS, they can be used as a proxy.

[24] BBS and UNICEF (2019) *Progotir Pathey, Bangladesh Multiple Indicator Cluster Survey 2019, Key Findings*. Dhaka.

[25] Mohsena, M., Goto, R. & Mascie-Taylor, C.G.N. (2015) *Regional variation in maternal and childhood undernutrition in Bangladesh: evidence from demographic and health surveys*. *WHO South-East Asia Journal of Public Health.* July–December; MICS (2019) *Nutritional Status of Children*. Bangladesh 2019.

[26] Headey, D., Hoddinott, J., Ali, D., Tesfaye, R. & Dereje M. (2015) The Other Asian Enigma: Explaining the Rapid Reduction of Undernutrition in Bangladesh. *World Development*. Volume 66. Saha, R. G. & Kayum Shikdar, Md. (2019) *Socio-economic Determinants Affecting Nutritional Outcomes of the Children in Bangladesh*. *IOSR Journal of Humanity and Social Sciences.* Volume 24. Issue 1; Sultana, P., Rahman, Md. M. & Akter, J. (2019) *Correlates of stunting among under-five children in Bangladesh: a multilevel approach*. *BMC Nutrition*. 5:41.

[27] World Bank Data.

[28] National Institute of Population Research and Training (NIPORT), Mitra and Associates & ICF International (2016) *Bangladesh Demographic and Health Survey 2014*. Dhaka, Bangladesh and Rockville, Maryland, USA: NIPORT, Mitra and Associates, and ICF International.

[29] Hossain, M.B. & Khan, Md. H.R. (2018) *Role of parental education in reduction of prevalence of childhood undernutrition in Bangladesh.* *Public Health Nutrition*. Volume 21. Issue 10. pp 1845-1854.

Thus, rapid and sustained nutritional improvements are achieved through a multidimensional and multi-sectoral approach, and not only through large nutrition-only programmes.[30] This multidimensionality needs to be translated into adequate sectoral investments into CIP2 programmes (see Chapter 9). Persistent disparities by region and socio-economic group prevent a faster and more inclusive reduction in undernutrition. As a consequence, the prevalence of undernutrition remains higher in rural compared to urban areas and in particular highest in Sylhet, Mymensingh and Barisal for prevalence of stunting (43%, 36% and 33%, respectively) and wasting (10%, 9% and 9%, respectively).[31] Women in Sylhet have an average lower body weight than women in Chittagong, Rajshahi and Khulna.[32]

COVID-19 pandemic might negatively impact progress towards the CIP2 goal

While the impacts of the COVID-19 pandemic were largely unknown at the time of writing this report, it has been hard to appreciate its scale and scope, and the effects on food and agriculture through both supply and demand channels.[33] On the supply side, while it is likely that longer-term impacts on agricultural production might be largely mitigated given the measures taken by the GoB, this will depend on the economic growth scenario and on the length of the lockdown to reduce the spread of the virus. It is essential that the import of food and intermediate inputs and the mobility of farm labourers are maintained to guarantee food production and access to healthy diets by consumers. It is on the demand side that Bangladesh seems to be more vulnerable. A PPRC and BIGD Rapid Response Survey on the Poverty Impact of COVID-19 (April 2020) registered a reduction of more than 70% in the income of the extreme poor, vulnerable non-poor and moderate poor within the first week of lockdown (26 March 2020). This translated in a 40% and 35% per capita food expenditure reduction for the poor and vulnerable non-poor, respectively. A likely coping strategy will be to substitute more expensive and nutritious foods with staples, favouring caloric over micronutrient intake, which will undermine recent progress in diet diversification and nutrition outcomes. This, however, is likely to be transitory and could be mitigated by the availability of affordable protein-rich foods such as milk, chicken broilers and eggs. Thus, in responding to COVID-19, it will be essential to integrate nutrition considerations into emergency response and recovery and to prioritise the needs of the most vulnerable. To this end, social protection measures providing direct food support should be considered.

[30] Headey, D., Hoddinott, J., Ali, D., Tesfaye, R. & M. Dereje (2015) *The Other Asian Enigma: Explaining the Rapid Reduction of Undernutrition in Bangladesh*. *World Development*. Volume 66.
[31] National Institute of Population Research and Training (NIPORT) & ICF (2019) *Bangladesh Demographic and Health Survey 2017-18: Key Indicators*. Dhaka, Bangladesh, and Rockville, Maryland, USA.
[32] Mohsena, M., Goto, R. & Mascie-Taylor, C.G.N. (2015) *Regional variation in maternal and childhood undernutrition in Bangladesh: evidence from demographic and health surveys*. *WHO South-East Asia Journal of Public Health.* July–December.
[33] Schmidhuber, J., Pound, J. & Qiao, B. (2020) *COVID-19: Channels of transmission to food and agriculture*. Rome. FAO.

3.2 Progress towards Outcome I: Diversified and sustainable agriculture, fisheries and livestock for healthy diets

Outcome I of the CIP2 relates to interventions in crop and horticulture, fisheries and livestock productions in order to sustainably improve diets for enhancing nutritional outcomes. It is structured into three programmes on crop production, agricultural inputs, and animal source foods and these are comprised of 11 related sub-programmes. The indicators for monitoring Outcome 1 are shown in Table 2.

3.1.1 Assessment of progress towards achieving Outcome I

Table 2 – Outcome I: Selected performance indicators

CIP2 Outcome proxy indicators	2015/16 Baseline	2016/17	2017/18	2018/19	2019/20	2020/21	Target	Source
Rice import dependency three years moving (import/availability in three years moving average)	2.3%	2.0%	3.6%	3.5%	3.43%	1.35%	0% 🟡	FPMU/ MISM, BBS
Agricultural sector GDP[34] growth rate (%) a) Crop and horticulture b) Fisheries c) Livestock d) Forestry	2.8% a) 0.9% b) 6.1% c) 3.2% d) 5.1%	3.0% a) 1.0% b) 6.2% c) 3.3% d) 5.6%	4.2% a) 3.1% b) 6.4% c) 3.4% d) 5.5%	3.9% a) 2.0% b) 6.2% c) 3.5% d) 8.3%	3.1% a) 0.9% b) 6.1% c) 3.0% d) 6.4%	3.2% a) 2.3% b) 4.1% c) 2.9% d) 5.0%	3.9% 🟡 a) 1.4% b) 6.5%[35] c) 5.9% d) 5.3% by 2021 (7FYP)	BBS, DAE, DLS, DoF, BFD
Share of rice value added in total food value added in current price	33.83%	32.31%	33.48%	33.31%	…*	23.50%	Decrease over time 🟡	BBS
Wage differential between male s and females in agriculture	32.08% R	30.03% R	28.98%	31.43%	…*	31.08% R	Decrease over time 🟡	BBS

*R: revised; …*data not available

The colour indicator shows the progress achieved: target reached 🟢; on track 🟡; off track 🔴 .

Rice import dependency declined significantly from the previous year

Rice import dependency is measured as the quantity-ratio between imports and national availability, on a three-year moving average basis. This has remarkable improved, falling to 1.35% in 2020/21 from 3.43% previous year due to a record domestic rice production of 38.90 MMT last year and a consequent waning of import demand. Though it is slightly improved to 947.41 thousand metric tons in 2020/21 (70% of which was Government side) from 4.80 thousand metric tons in 2019/20 (100% of which was private).

Diversification in production remained sluggish

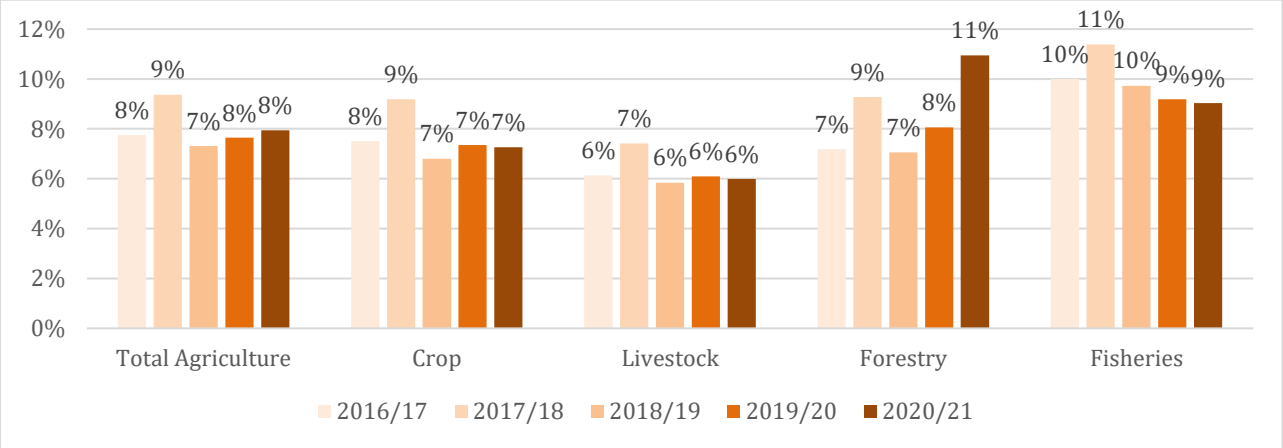
As observed in Table 2, the overall agriculture sector GDP growth rate in 2020/21 was lower than that of 2019/20, but higher than previous two years. The GDP growth rate for crop and horticulture was the second highest in 2020/21 over the last six years from 2015/16 to 2020/21 and had exceeded the 7FYP targets. Fisheries, Livestock and Forestry sector GDP growth rates were the lowest over the last six years periods since the base year 2015/16 and also lower than 7FYP targets. These three sectors' GDP growths picked at 6.2%, 3.5%, and 8.3%, respectively in 2018/19-reflecting a record production and the excellent performance- but gradually dropped to 4.11%, 2.94% and 4.98%, respectively, mainly due to global COVID-19 pandemic and its influence in different activities of agriculture (Figure 5). However, the overall

[34] The agricultural sector includes crop and horticulture, livestock and related products, forestry and related services, and fisheries. The forestry sector has been included in MR20 for the first time in recognition of its role in food security, sustainable development and preserving agrobiodiversity.

[35] The target for fisheries is according to FPMU estimations while the other targets are from the 7FYP.

agricultural GDP growth has been sustained: from a 2.8% in the baseline year, it peaked at 4.2% in 2017/18 and significantly plummeted over the next 3 years but close to the seven Five-year plan's target (3.9%).

Figure 5 - Sectoral growth (at current price) in agriculture over the reference period (2016/17 - 2020/21; Base 2015/16)



Source: BBS

Diversification in agriculture remained sluggish over the reference period, driven mostly by fisheries. Through their more dynamic performance, livestock and forestry sectors increased their shares in total agriculture GDP respectively by 4.6 and 2.9 percentage points. Meanwhile, the relative share of the crop and horticulture, and fisheries sectors dropped by 6.8 and 0.7 percentage points with the non-cereal component lagging and world pandemic COVID-19 (Figure 6).

Figure 6 - Evolution of the agricultural GDP (at current price) composition by subsector

Source: BBS

The decline continued in the share of rice in the total food value added

The evolution of agricultural GDP composition of the crop and horticultural sector is consistent with the progressive, albeit slow, negative trend in the share of rice in total food value added. Between 2018/19

and 2020/21, this share declined by almost 10 percentage points (Table 2). This confirms the rapid pace of diversification in food production.

The differential in wages between males and females in agriculture rebounded

According to ILO (2018)[36], Bangladesh has one of the lowest gender wage gaps in the world and first among South Asian countries.[37] This surprising result may in part be attributed to the garment sector where workers' organisations have contributed to reducing the gap. Concurrently, Bangladesh registered a 3.4% increase in wages over the period 2008-2017, against the South Asia average rise of 3.7%. In this context of record low gender wage gap and slow wage increases compared to other countries in South Asia, the agricultural wage differential[38] rebounded to 31.08% in 2020/21 from 31.48% in 2018/19 and from 32.1% in the baseline year (Table 2). This is due to a higher increase in agricultural male wages over female wages in the last financial year.

3.1.2 Policy challenges and recommendations for further actions

Accelerate agricultural growth and resilience through climate-smart investments

Over the past twenty years, agriculture has been one of the main contributors to poverty reduction in Bangladesh. It now needs to accelerate the shift towards high-value agriculture, including horticulture, livestock, and fisheries as well as greater value addition to improve farmers' income and household nutrition. More recently, the positive trend in agricultural GDP growth rate culminated in the attainment of rice self-sufficiency and allowed the start of a structural, but slow, transformation towards diversification in production -especially towards poultry, fisheries and aquaculture. This has partially translated into improved diets and nutritional outcomes. In spite of these past and current achievements, Bangladesh is increasingly facing the challenges of having to sustain agricultural productivity growth and to boost the production of nutrient-rich foods (both non-cereal crops, livestock and fish products) in a context of increased short-term climate variability (monsoon erratic patterns) and long-term climate change impacts (salinity intrusion, increasing temperatures), land scarcity and population pressure.

The FAO Climate-Smart Agriculture (CSA) approach is useful to reorient agriculture systems towards climate change resilience while maintaining the focus on productivity, sustainable food and nutrition security.[39] CSA interventions[40] ensure increased productivity, strengthened climate resilience and reduced greenhouse gas emissions from agriculture. To this end, in April 2018, the GoB and the World Bank launched the Bangladesh Climate-Smart Agriculture Investment Plan (CSAIP) which aims at identifying climate-smart investment opportunities and accordingly, mobilise resources.

According to the CSAIP, the transition to a climate-resilient growth path is the only option to ensure that long term key agriculture development targets are met. By 2040, the current degree of sea-level rise may reduce available cropland by 24% in coastal divisions across growing seasons. Greater economic activity is expected to trigger +2% of greenhouse gas (GHG) emissions over the period 2015-2040 and to increased water consumption by 0.8-1.7 million litres per year, exacerbating water scarcity. CSA offers growth potential of more than 50% over 2015 levels for non-rice crops, livestock and fisheries. This would allow to maintain rice self-sufficiency, double the production of non-rice crops and meet the national demand for livestock and fish thereby meeting nutritional requirements after post-harvest losses, decrease income

[36] ILO (2018) *Global Wage Report 2018/19 – What lies behind gender pay gaps*.Geneva. International Labour Office.
[37] World Economic Forum (2019) *Global Gender Gap Report 2020*. Geneva.
[38] The wage differential is calculated in terms of 'male premium': (male wage – female wage)/ female wage.
[39] More on Climate-Smart Agriculture can be found at http://www.fao.org/climate-smart-agriculture/en/.
[40] See for instance Programme I.2 on Urea Deep Placement.

dependency on rice, decrease water use in irrigation, reduce nitrogen dioxide and other (Nationally Determined Contribution) emissions and increase the use of organic fertilisers.[41]

A key factor in adequate CSA adoption is its mainstreaming into core policy frameworks, as various sectors in Bangladesh are affected by climate change. The Bangladesh Delta Plan 2100 approved in September 2018 represents the combination of long-term cross-sectoral strategies and subsequent interventions to ensure food and water security, economic growth and environmental sustainability while reducing vulnerability to natural disasters and building resilience to climate change. This, notwithstanding the effects of the COVID-19 crisis, should contribute to helping Bangladesh reach the upper-middle income country status by 2030 and the high-income country status by 2041, as stated in Vision 2041. While Bangladesh is not new to CSA and related interventions, it is essential that these are embedded in a more holistic approach in mid-term planning (the Eighth Five Year Plan for instance) to ensure CSA technological adoption. To this end, the CSAIP identifies Five CSA Investment Packages with a total volume of USD 809 million (USD 2 billion, PPP).[42,43] Synergies and cooperation at the regional level, especially with South and South-East Asian countries, and in close collaboration with CGIAR centres, must be reinforced. This also needs to involve the operationalisation of technological adoptions and learning from best practices in the region.

Rebalance agricultural support to ensure diversification is a viable option for farmers

Malnutrition remains a problem in Bangladesh with the consumption of vegetables and fruit and animal source foods (ASF) remaining inadequate and below international recommendations for a large part of the population. It is therefore essential to improve the availability of nutrition-dense foods, such as pulses, leafy vegetables, fruits, ASF (fish, milk and milk products, poultry and meat), high yielding rice varieties, biofortified grains and tubers, parboiled and unpolished brown rice. This can be achieved by supporting domestic production and facilitating imports along with behavioural communication campaigns to inform consumers of the nutritional value of these foods and enhance demand. A recent decline in the price of shrimp on international markets resulted in the reduction of shrimp export and its rise in domestic consumption, thus demonstrating the potential impact of such supportive measures. Similarly, as of June 2019, low domestic rice prices reinforced by international trends[44] directly correlate with higher consumption of this commodity relative to other foods. In addition, production incentives to farmers (e.g. through input provision and credit) discourage farmers from considering alternatives to rice.

The political economy of rice is complex and has direct implications on consumers (in choosing their optimal food basket composition) and producers (in choosing cultivars), and indirect ones on poverty reduction, improving nutritional outcomes, on public budget choices and allocation, and on inflation. It is paramount to balance the interests of producers and those of consumers while keeping in mind self-sufficiency, FNS policy objectives (i.e. diversification in consumption to improve nutritional outcomes) and initiatives to continue facilitating rice imports (e.g. the recent tendency to liberalise markets, allowing entry to private entities).

[41] IBRD and World Bank (2019) *Climate Smart Agriculture Investment Plan Bangladesh – Investment opportunities in the agriculture sector's transition to a climate resilient growth path*. Washington, DC.
[42] PPP here means purchasing power parity.
[43] IBRD and World Bank (2019) *Climate Smart Agriculture Investment Plan Bangladesh – Investment opportunities in the agriculture sector's transition to a climate resilient growth path*. Washington, DC.
[44] FAO (2018) *Food Outlook – Biannual Report on Global Food Markets- November 2018*. Rome. FAO (2019) *Food Outlook – Biannual Report on Global Food Markets – November 2019*. Rome.

In this context, rebalancing the support to producers is essential to ensure that diversification in production is a viable and profitable choice for farmers. This process is already ongoing, for instance through the conversion of rice fields into shrimp farms explained by the profitability of shrimp production.

This type of initiative should be incentivized. To this end, it is essential to continue investing in indirect support to farmers with measures such as the provision of access to market information, data-driven analysis and technology which can help optimise agricultural practices. This could include the creation of a database of farmers in specific value chains with their production, credit and transaction history accessible to relevant actors (insurance companies and banks for example), thereby supporting financial innovation. Switching to a high price regime for rice may also be envisaged as it might be beneficial both for producers -who would receive adequate income and allow some of them to switch to more profitable market crops- and for consumers -who may switch to more nutrient-dense foods. Box 1 provides an analysis of the COVID-19 impact on food production.

Box 1 - COVID-19 impact on food production

On the 26th March 2020, the GoB declared a lockdown to contain the spread of COVID-19. The national lockdown strategy included restrictive measures such as border closures, restrictions of movements, closures of restaurants and food markets, with likely effects on the food supply chain and agricultural production. Limitation on movements had a negative impact on farmers -smallholders in particular- due to limited access to their land and markets to buy essential inputs and sell their produce. Harvesting and transport bottlenecks led to losses for rural producers of perishable fruits, vegetables and dairy. Within weeks, staple food prices increased by 20-30%, eroding the real value of salaries and savings. As the reduced household spending focused increasingly on staples, producers of meat, poultry and fish were negatively affected. The situation was exacerbated by the structural scarcity of cold storage facilities and consequent risk of harvest spoilage, and by the exceptional shortage in agricultural workforce. The fisheries sector is also like to have suffered from a further decline in export demand of fish and shrimp from the EU leading to a fall in export earnings. Concurrently, poultry producers suffered from a fall in domestic demand due to health-related concerns amongst consumers.

In order to sustain food availability, a number of recommendations was set forth. For example, it was suggested to treat food production as an 'essential service' thus opening special procedures for food, trade and agricultural inputs to keep supply chains open and functional through the establishment of 'green channels'.Direct support to rural livelihoods - and indirect support for farmers – e.g. through facilitated loan schemes and grants and postponement of loan repayments- was also suggested. Trade flows of productive inputs were to be ensured: the 2020 boro season needed to go ahead by facilitating the import of improved seeds by lowering import tariffs for example.

Sources: Wardad, Y. (2020) *Vegetable growers in dire straits*. The Financial ExpressApril 18; Khan, N. (2020) *Eat vegetables, save farmers!* Daily Star 19 April; FAO (2020) *Rapid Assessment on Potential Impact of COVID-19 Outbreak on Food and Agriculture System in Cox's Bazar*; The Financial Express (2020) *Poultry and dairy need immediate succor*. 17 April;Wardad, Y. (2020) *Chicken, Eggs, Meat Hit 12-yr Low at Farm Level*. The Financial Express. April 19; World Bank (2020) *Food Security and COVID-19*. Brief; FAO (2020) *Rapid assessment of Food and Nutrition Security in the Context of COVID-19 in Bangladesh*. Draft. April.

Improve support to smallholder farmers by adapting it to their farming profile

Smallholder farmers in Bangladesh have been profiled by the Consultative Group to Assist the Poor (CGAP) through a nationally representative survey, according to their level of education, socio-economic status, access to emergency funds, mobile phone ownership, their attitude towards the future, and encountering

unexpected life and farming events. The population of smallholder farmers is accordingly classified into four distinctive categories.[45]

- Farming for sustenance (27% of all farmers). Vulnerable smallholders, largely living below the extreme poverty line, relying on their farm for survival, low level of education and limited financial inclusion (29% of this group);
- Battling the elements (31% of all farmers). Limited level of education, nearly universal mobile phone ownership; more financially included (the case for 38% of this group), access to mobile money and savings' modalities;
- Options for growth (31% of all farmers). Stable and resilient to shocks; largely living above the poverty line; relying on agricultural income, with the possibility to turn to off-farm income opportunities; universal mobile phone ownership; more financially included (59% of this group);
- Strategic agricultural entrepreneurship (11% of all farmers). Diversified and thriving farms, with multiple sources of income and access to several financial tools; 69% of financial inclusion.

The different groups continuously face climate and animal health-related challenges - such as floods and drought events, crop pests and animal diseases; market-related risks –fragmentation of the value chain, high intermediation fees, consequent lack of traceability; access to/poor quality of productive inputs; post-harvest losses due to lack of post-harvest storage facilities and modern reliable transports (cold chain for instance), market fluctuations; and cash constraints. This profiling could be used to ensure that tailored support is provided to smallholder farmers.

Promote sustainable use of forests to ensure the livelihood of local communities and agrobiodiversity preservation

The importance of forests for the sustainability of food and agricultural systems is widely recognised.[46] Forests and trees in Bangladesh are a rich source of building materials, food, medicine, fuel and other products (such as honey, wax and herbs), thereby providing livelihoods to local communities. They perform important ecosystem functions such as carbon sequestration and soil and water protection. They also support resilience as forest products are often consumed during periods of food scarcity and provide livelihood safety nets. Foods from forests, notably, leaves, seeds, nuts, fruits, mushrooms, honey, insects and animals, are rich in micronutrients and can make important contributions to diet diversity and nutrition.

While the country's forests are heavily utilised, the ability to restore forests is limited. Forests and tree resources are under constant pressure from urbanisation and practices which leave forested landscapes degraded. For instance, the increased population due to the massive influx of displaced Rohingya people since 2015 has put pressure on natural resources in Cox's Bazar (Box 2). Although overall tree canopy coverage increased modestly from 2000 to 2014, the natural forest area declined[47], and there is a persistent widening gap between the demand and supply of forest products.[48] A major challenge faced by Bangladesh in the near future will be the balance between sustainable use and conservation of these resources, and economic growth. Forest cover in the country was only 12.8% in 2015 (14.1% excluding

[45] Anderson J., Moler A. &Kretchun N. (2016) *National Survey and Segmentation of Smallholder Household in Bangladesh – Understanding Their Demand for Financial, Agricultural and Digital Solution*. *CGAP Working Paper*. December.

[46] Powell, B., Ickowitz, A., McMullin, S., Jamnadass, R., Padoch, C., Pinedo-Vasquez, M. & Sunderland, T. (2013) *The Role of Forests, Trees and Wild Biodiversity for Nutrition-Sensitive Food Systems and Landscapes.* *ICN2 Second International Conference on Nutrition – better nutrition better lives.* FAO – WHO.

[47] Potapov, P., Siddiqui, B., Iqbal, Z., Aziz, T., Zaman, B., Islam, A., Pickens, A., Talero, Y., Tyukavina, A. &Turubanova, S. (2017) *Comprehensive monitoring of Bangladesh tree cover inside and outside of forests, 2000–2014*. *Environmental Research Letters.*12(10).

[48] Rahman, L.M. (2016) *Bangladesh National Conservation Strategy- Forest Resources.* Dhaka. IUCN and Bangladesh Forest Department.

water bodies) but sustainable development targets are currently being set to increase it. Fortunately, newly available tools such as the Bangladesh Forest Inventory and Land Cover Map 2015, and data sharing policies, can help reach these targets. Further work is being carried out under a large World Bank funded project (*Sustainable Forests and Livelihoods- SUFAL*), which aims to improve collaborative forest management approaches and to support the next national forest inventory, tree planting, and other initiatives. Finally, evidence shows that research on ecosystem services valuation is still insufficient in Bangladesh[49]: a better assessment of the socio-economic and environmental contribution of forestry to agriculture and the rest of the economy would provide more evidence to guide sound policymaking such as setting up carbon emission permits or payment for environmental services.

Box 2 - Environmental degradation in Cox's Bazar

Bangladesh continues hosting more than a million displaced Rohingya individuals in Cox's Bazar. This large-scale protracted humanitarian crisis has brought both national and international attention to the nexus humanitarian development, FNS and natural resources' degradation. Ensuring FNS for these displaced people is increasingly putting pressure on the national food system, in a disaster-prone area where 38% of the host community is estimated to be food insecure. An FAO survey in Cox's Bazar showed that the lockdown to control COVID-19 was further exacerbating food consumption and nutritional status challenges.

The GoB has adopted a UN-style cluster system responsible for preparation, response and monitoring of disaster incidences, inclusive of a Food Security Cluster (FSC), which operates at the national-level and is responsible for ensuring preparedness for disaster-related food insecurity. The FSC has also established a Food Security Sector (FSS) within in the Interagency Sectoral Coordination Group, which coordinates food aid and food security activities in and around the camps. WFP and the FSS coordinate the Refugee influx Emergency Vulnerability Assessment (REVA), a regular survey that assesses food insecurity amongst the displaced population and host community populations. While the REVA 2019 (on 2018 data) showed a fragile but stabilised situation compared to the baseline (REVA 2018, on 2017 data), poor diets, lack of education and livelihood opportunities as well as precarious health and WASH conditions persisted.

In addition, the uncertainty surrounding the displaced people's presence increasingly affects the delicate ecosystem in and around Cox's Bazar. Severe deforestation (an estimated 820 tons per day of trees cut down to provide cooking fuel and makeshift shelters), pressure on fresh-water resources, accumulation of waste and water contamination are some of the prominent issues. Actions undertaken by the GoB with the support of international actors include: support programmes to provide Liquid Petroleum Gas as an alternative to firewood; reforestation initiatives; and the establishment of waste ecological treatment centres.

Bangladesh has set an example of humanitarian assistance to the world by supporting the displaced Rohingya population. However, the operations can only be maintained with financial and technical support of the international community. While food insecurity, lack of livelihood opportunities and education, poor health and WASH situation remain major issues, environmental degradation also needs to be addressed.

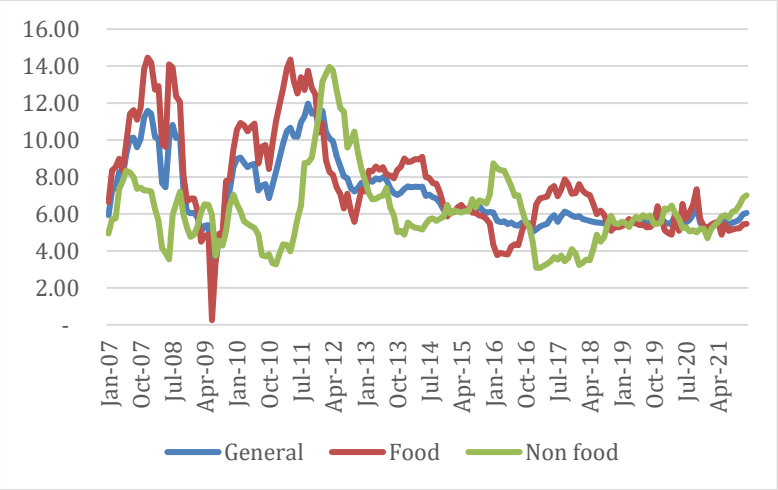
Source: WFP (2019) *Refugee influx Emergency Vulnerability Assessment (REVA), Cox's Bazar, Bangladesh*. May; WFP (2018) *Refugee influx Emergency Vulnerability Assessment (REVA) – Technical Report- Cox's Bazar*. August ; FAO, IFAD, UNICEF, WFP, WHO (2019) *Common Country Analysis Bangladesh – End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture* (mimeo); UN (2010) *UN Common Country Analysis for the United Nations Sustainable Development Cooperation Framework and the 2030 Agenda* (mimeo). FAO (2020) *Rapid Assessment on Potential Impact of COVID-19 Outbreak on Food and Agriculture System in Cox's Bazar.* Dhaka. May.

[49]Barua, S.K., Boscolo, M. &Animon, I. (2020) *Valuing forest-based ecosystem services in Bangladesh: Implication for research and policies. Ecosystem Services.* Volume 42. April.

3.3 Progress towards Outcome II: Efficient and nutrition-sensitive post-harvest transformation and value addition

Post-harvest transformation and value addition through nutrition-sensitive interventions aim to create Nutrition-Sensitive Value Chains (NSVC), to ensure that nutritious food is available to consumers and producers receive an adequate share of the value addition. Outcome II comprises two programmes: strengthened post-harvest value chain focusing on Micro, Small and Medium Enterprises (MSMEs), and improved access to market facilities and information. Each programme consists of three sub-programmes.

Figure 7 - General, food and non-food inflation



Source: BBS

3.1.3 *Assessment of progress towards achieving Outcome II*

Table 3 - Outcome II: Selected performance indicators

CIP2 outcome proxy indicators	2015/16 Baseline	2016/17	2017/18	2018/19	2019/20	2020/21	Target	Source
Average annual CPI inflation rate	5.9%	5.4%	5.8%	5.5%	5.65%	5.56%	4.6% by 2025 8FYP 🟢	Bangladesh Bank; National Account Statistics, BBS
Change in agricultural wage rate of male agricultural labourers (without food)	7.6%	5.3%	–0.2%	0.5%	1.27%	3.22%	6.56% by 2021 8FYP (per capita real GDP growth rate + 0.5)[50] 🔴	Bangladesh Bank/DAM/ BBS
SDG 2.c.1: Change in Indicator of Food Price Anomalies (IFPA for rice)[51]	–0.9	2.3	0.2	-1.1	0.19	1.1	Stable 0.5 SD of mean 🔴	FAO

The colour indicator shows the progress achieved: target reached 🟢 ; on track 🟡 ; off track 🔴 .

[50] According to the 8FYP (page 43), the GDP growth rate is projected at 7.4% in 2020. Factoring in the population growth rate (1.34%), the target is computed as: 7.4 – 1.34 + 0.5 = 6.56%.

[51] Calculations based on the *FAO-GIEWS methodology*.

The Consumer Price Index declined but achieved the target for 2021

The average annual Consumer Price Index (CPI) inflation rate measures the change in the price of a set of essential commodities over a base year. In the FY 2020/21 CPI inflation rate declined to 5.6% from 5.65% in 2019/20 whereas achieved the target of 5.40% for 2021. Effective coordination between fiscal and monetary authorities reflected in timely wane of tariffs, policy-led bountiful agricultural production in the country and reduction of LoC margin on import of essential food commodities have contributed significantly to this achievement52.

General inflation hit a record high in both 2007/08 and 2010/11 due to the upsurge in food prices triggered by the international food price hike. Food inflation remained higher than non-food inflation - except in 2011/12 and 2015/16. Over the last decade, both food and non-food inflation have been volatile but converged in 2018/19. However, a bit diverged condition has been observed again in 2019/20 when food and non-food inflation exist at 5.56% and 5.85% whereas in the FY 2020/21, the rate was 5.73% and 5.29% respectively. This is the result of a year-on-year decline in food inflation and an increase in non-food inflation.

The agricultural wage rate advanced but is still off target

The agricultural wage rate measures the purchasing power of the agricultural labour force in terms of rice. It is the ratio between the general wage index and the average wholesale rice price, calculated as a three-year moving average. It has improved compared to last three years. This indicator is still slightly off the target of 6.56% by 2021, which requires immediate attention. The negative trend of the index is due to the higher increase in rice price compared to that of the general wage index over the last two years in 2016/17 and 2017/18.

There was a low rice price alert compared to the previous year

The Indicator Food Price Anomalies (IFPA, SDG 2.c.1) measures abnormal monthly and yearly changes in food prices, excluding seasonality and inflation effects.53 The rice IFPA shows that the price of rice rose significantly in 2020/21 compared to the previous year (Table 4). The IFPA of rice rose to 1.1 in 2020/21 from 0.19 in 2019/20. This was caused by the rise in the average coarse rice wholesale price up to 40.77 BDT/Kg in 2020/21 from 29.31 BDT/kg in 2019/20. Domestic rice production is generally enough to meet national demand.54 However, production losses due to natural calamities put pressure on both availability and prices, which are generally eased through import. The adequate management of buffer stocks is therefore essential to reduce price volatility during crises.

In the Fiscal Year 2020/21, the IFPA has been increased to 1.1 meaning an alert high price compared to the previous year 2019/20 normal price.

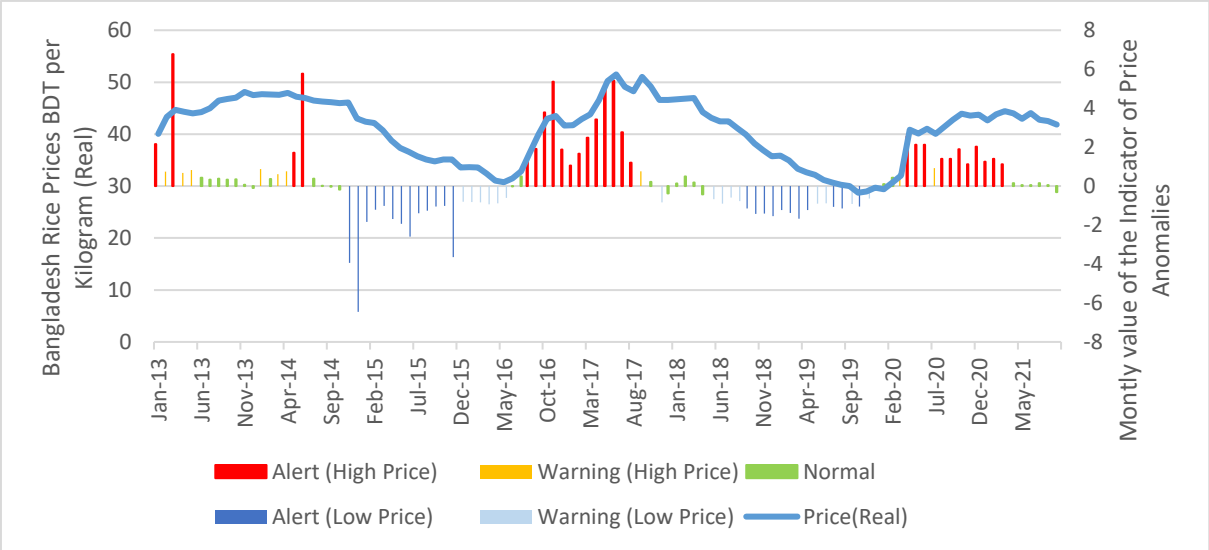
IFPA values for both rice and wheat followed a similar pattern between 2010/11 and 2015/16 but diverged thereafter (Table 4). In the case of wheat, alert levels were mainly normal or low, except in 2013/14 and 2017/18 when a high price alert was detected probably due to a sudden increase in the international price and a 2.11 lakh MT domestic production loss in 2017/18 only partially offset by a 0.78 lakh MT import

[52] Monetary Policy Statement of Bangladesh Bank, 2021.
[53] More details on the IFPA can be found on the *FAO Food Price Monitoring Analysis website*.
[54] GoB (2019) *Monitoring Report 2019 of the Bangladesh Second Country Investment Plan*. Dhaka. FPMU. Ministry of Food.

increase.55 As wheat is mainly an imported food commodity, its price fluctuations are highly correlated to the trend in international prices.56

Table 4: Indicator of Food Price Anomalies (IFPA) for Bangladesh for rice in 2020/2021		
Fiscal Year	Rice	
	IFPA Rice	Alert
2012/13	0.97	Warning (High Price)
2013/14	0.95	Warning (High Price)
2014/15	-1.71	Alert (Low Price)
2015/16	-1.11	Alert (Low Price)
2016/17	2.82	Alert (High Price)
2017/18	0.21	Normal
2018/19	-1.18	Alert (Low Price)
2019/20	0.24	Normal
2020/21	1.06	Alert (High Price)

Figure 8 - Indicator of Food Price Anomalies (IFPA) for rice in Bangladesh



Source: Data from BBS and methodology from Baquedano F.G. (2015) Developing an indicator of price anomalies as an early warning tool: A compound growth approach. FAO. Rome.

55 FPMU website.
56 Hossain, M. & Yunus, M. (2016) *Estimates of Per Capita Consumption of Food Grains in Bangladesh*. *Bangladesh Development Studies.* 39(1–2). 103–116.

3.1.4 Policy challenges and recommendations for further actions

Invest in conservation of nutrients during post-harvest storage, transformation and distribution

Nutrition-sensitive approaches to value chain development have emerged as a modality to reorient food systems (from farm to fork) for improved nutritional outcomes. NSVC comprise safe storage, processing and preservation technologies, labour-saving technologies and fortification, as well as cold chain and distribution mechanisms, which help better retention of nutrients thereby preventing nutrient losses.57 For better management of agriculture marketing, in the year under review, the GoB passed the 'Agricultural Marketing Bill 2018' to expedite improved management system, trading, production and marketing of agro-based products ensuring food safety and fair prices for growers and consumers.58 The AMB 2018 has been included into the 'Mobile Court Act 2019.' In line with the Bill, up to December 2019/20 the Directorate General of Food (DG Food), under the Modern Food Storage Facilities Project (MFSP), distributed 70-litre waterproof food-grade plastic silos among 500,000 households in 63 upazilas of 19 disaster-prone districts. More over 3 lakh food grain plastic silos have been planned for distribution during 'Mujib Borsho'. The project has been approved on 16/07/2020 for implementation from July 2020 to December 2021. During this time, silos will be distributed to 3 lakh families in 23 upazilas of 8 divisions of the country and already the final list of beneficiaries in 21 districts has been finalized. This aimed at facilitating the storage of quality seeds and foodstuff during natural disasters.59 DG-Food has been implementing a total of 162 food storages (48 storages each of 1,000 MT capacity and 114 storages with 500 MT capacity), in 131 Upazillas, of which 105 storages have already been completed and other 4 storages are nearly completed.60 From July 2013 to 30 June 2021, the overall physical progress of this project is 96% and financial progress is 93.18%. Additionally, with World Bank support, the government continues to establish large-scale silos in Ashuganj, Madhupur, and Mymensingh that include six on-site food-testing laboratories.61 The progress of these 3 silos is on average 74.9%. The project named 'Construction of Modern Food Storage' is being implemented from January/2014 to October/2021. A new private sector initiative- Cold Chain Bangladesh Limited (CCBL) - jointly owned by Golden Harvest Ice Cream Limited and Golden Harvest Foods Limited, co-financed by International Finance Corporation (IFC) is to invest in a network of temperature-controlled warehouses and logistics assets in 12 storage locations across the country.62

Promote nutrition-sensitive value chain through quality and safety certifications

The number of agricultural MSMEs63 in Bangladesh is estimated at more than 1.7 million, around 22% of all MSMEs, providing employment to about 40% of the population and contributing to the agro-processing sectoral turnover of 3.2 billion USD.64 Agricultural MSMEs are essential service and product providers to farmers engaged with primary production. Strengthening improved practices and technology to preserve micronutrient content during harvesting and post-harvest operations -including sorting, grading, cleaning,

[57] De la Peña, I., Garrett, J. & Gelli, A. (2018) *Nutrition-sensitive value chain from a smallholder perspective – A framework for project design*. *IFAD Research Series* 30. September. Rome.
[58] GOB (2018) *Agriculture Marketing Bill 2018*. In Bangla.
[59] GoB (2019) *5,00,000 HH Silos Distributed As On November, 2019.* Modern Food Storage Facilities Project. Dhaka. Directorate General of Food. Ministry of Food.
[60] GoB (2021) *Annual Report 2020/21* . Dhaka. Directorate General of Food. Ministry of Food.
[61] *Ibid.*
[62] CCBL (2019) *Golden Harvest Joins Hands with IFC for Integrated Cold Chain Network*. Cold Chain Bangladesh Limited.
[63] Defined as enterprises with 100 employees or less.
[64] Feed the Future (2019) *Pathways to prosperity -Rural and Agricultural Finance – State of the Sector Report*. November.

packaging and storage; secondary processing (value addition); and marketing and distribution, is essential in ensuring that value chains are nutrition-sensitive.

Both primary producers and MSMEs could benefit from obtaining quality and safety certifications. The GLOBALG.A.P. is a trademark and sets voluntary standards for Good Agricultural Practices (GAP) worldwide. In this context, the Bangladesh-USAID Agriculture Value Chain (AVC) Project (2013-18) - in collaboration with the Dhaka Chamber of Commerce and Industry and the GLOBALG.A.P. - supported large agribusiness industries such as Banglafresh (NAAFCO), Gardenfresh (Ispahani), and Shuddho (Shwapno) in delivering fresh and quality product to consumers.65 However, nutrient composition and food safety information are often not visible on the product which means that certifications need to be complemented with nutrition labelling and nutrition awareness campaigns (see Programme V.1 and Programme III.1), which would, in turn, allow MSMEs and producers to obtain a premium price for quality and safety of supplied food.

Promote financial inclusion to support the resilience of agro-food MSMEs in rural areas

Improving MSMEs' financial inclusion is a fundamental challenge at the heart of a country's financial and economic development. Access to formal finance by MSMEs in Bangladesh is limited compared to the average for the South Asia region, with an estimated financing gap of BDT 237 billion (USD 2.8 billion). As of 2018, 47% of adults were financially included mainly through microfinance institutions, mobile money accounts, banks or non-banking financial institutions. Rural users show a preference for non-banks financial institutions over banks.66 Informal lenders are predominant in the agro-food sector. They are mostly actors involved in these value-chains whose core business is not finance-related but who have promptly responded to a growing demand for financial products in rural areas, exploiting, information advantages, lower transaction costs, and closer proximity with rural clientele compared to the formal and institutional counterparts.67 A key driver of financial inclusion is achieving 'Digital Bangladesh' through mobile money and digital payment platforms in rural areas. The agro-processing sector has been declared as an important sector by the government and to facilitate that the Bangladesh Krishi Bank provides finance for seven priority sectors.68 Similarly, the Rajshahi Krishi Unnayan Bank (RAKUB) has also introduced a special credit programme titled RAKUB-Small Enterprise Credit Programme (SECP) to promote the entrepreneurship in small agro-enterprises.69 Several innovative and alternative financing options can be further explored, including risk-sharing facilities, factoring, warehouse receipt finance, and/or start-up capital policies.70 Mainstreaming rural financial inclusion is essential for resilient rural economies which are undermined by a structural lack of cash and liquidity which has been exacerbated by the COVID-19 pandemic (Box 3). To that end, SME received an initial stimulus package from GoB of BDT 20,000 crore as a credit line facility at a subsidized interest rate of 2%, which was a timely response to the COVID-19 situation.71

Improve access to service, information and markets across food chains

The government is committed to using technology to eliminate poverty by ensuring digital inclusion for all, in line with Vision 2021 of a 'Digital Bangladesh' and with the a2i programme (see Programme IV.2).

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[65] USAID (2019) *Bangladesh USAID Agriculture Value Chain Project*.
[66] Financial Inclusion Insights (FII) Program website.
[67] FAO (2017) *Innovative risk management strategies in rural and agriculture finance- The Asian experience* by Emilio Hernández (ed.). Rome.
[68] Crop, Fisheries, Livestock, Farm and Irrigation Equipment, Agro based Industrial Project, SME, Continuous Loan (Working Capital and Cash Credit), Micro Credit (Small Loan).
[69] Innovision and Katalyst (2016) *Study on the Roles and Opportunities for Private Sector in Agro-food Processing Industry of Bangladesh*.
[70] World Bank Group (2019) *Financing Solutions for Micro Small and Medium Enterprises in Bangladesh. Washington, DC*
[71] https://thefinancialexpress.com.bd/views/covid-19-stimulus-package-a-critique-1586274943

This initiative can create an enabling environment that will improve smallholder farmers' integration into value chains and markets. In addition, the National *Agriculture Technology Programme – Phase II Project* (NATP-2) aims to improve market access by strengthening value chains. Marketing arrangements allowed marketing 8,025 MT through collaboration between the Project Implementing Unit - DAE and Hortex Foundation. The project reached more than one million beneficiaries organised in 40,514 common interest groups, which contributed to the development of micro plans subsequently aggregated into Union extension plans, as an approach to strengthen the responsiveness of extension services towards beneficiary needs. Key elements to speed up the implementation status are accelerating extension services' support for common interest groups and filling the gap between technology generation and adoption to ensure technology reaches farmers more rapidly.[72]

Also, to avoid distress crop sales by farmers, the Department of Agricultural Marketing (DAM) provided crop warehouse loans to 4,596 farmers in 2020/21.73 Under the USAID-funded Agricultural Value Chain (AVC) Project, to increase sales up to 60%, several partners such as Ispahani, Partex, and NAAFCO Pharma provided training on input management to some 39,000 lead farmers.74 Joikko Agro Ltd is a social enterprise with the goal of supporting farmers to improve their livelihoods by connecting them with a variety of local and international service providers -such as agronomic training, crop advisory, access to quality inputs, farm machinery rental, agri-loans - and by improving market access through crop aggregation and contract farming.75 Joikko works with over 10,000 farmers and its cornerstone component is six for-profit farmer centres which provide services and facilitate contracts with national

Box 3 – Post-harvest loss has increased due to COVID-19

Food loss and waste dramatically increased during the COVID-19 pandemic due to restrictions imposed on transport and access to markets. The marketing channels for perishables required special government support with suggested measures such as: procurement from the growers or assembly markets; establishment of private-public partnerships to increase food delivery by retailers; inclusion of fruits, vegetables and milk in the government-supported food relief for those whose FNS was affected by the crisis. The Ministry of Agriculture arranged special rail service for carrying perishables. Vegetables were also distributed among those in distress by some government department along with the daily essential. A 50 billion BDT Stimulus Package for Agriculture was announced by the Honourable Prime Minister to address the impact of the COVID-19 pandemic. Harvest and postharvest operations of foods such as fruits, vegetables, milk and meat products, due to their perishable nature, have been affected the most. For instance, the Bangladesh Dairy Farmers' Association reported that during the restrictions about 0.12 million litres of milk worth 57-60 crore BDT were being destroyed every day. The processing of milk should be encouraged to prepare traditional dairy products, such as ghee (clarified butter) and milk-based sweets, such as yogurt and curd (*doi*), which adds nutritional value and also support farmers' income. Fishers, small scale fish-farmers, and fish-farm labourers including women and youth along the value chains have been the worst victims of the COVID-19 pandemic in the country. An estimated 14.7 million fish-farmers, including all finfish seed producers; 0.83 million shrimp farmers including shrimp seed producers and 1,36 million fishers are directly involved in the value chain (DoF, 2019). Therefore, disruptions in the chain negatively affect millions of people's livelihood, and many more millions access to nutrient-dense fish for food (Feed the Future)

Proper planning (short, medium and long-term) and allocation of adequate resources are crucial to ensure postharvest infrastructural development, including low temperature storage and transportation facilities, and to promote food processing to improve shelf life, conserve nutrients and reduce loss and waste.

Sources: FAO (2020) *Coronavirus Disease 2019 (COVID-19)- Addressing the Impacts of COVID-19 in Food Crises April-December 2020;* GoB (2020) *Directive for Continued Agricultural Production and marketing due to Corona virus-Related*

[72] World Bank (2019) *Implementation Status and Results Report - Bangladesh NATP-2: National Agricultural Technology Program – Phase II Project (P149553)*. December.
[73] GoB (2021) Annual Report 2020-2021. Dhaka. Department of Agricultural Marketing, Ministry of Agriculture.
[74] *Ibid.*
[75] https://www.joikko.com/

and international buyers. By growing and selling together, farmers have improved their yields and are able to negotiate better prices for their collective crops. The project's objective is to form a social franchise that holds a growing network of farmer centres to account through a standard catalogue of fee and no fee-based service provision.[76]

The government needs to support such demand-driven initiatives by making rural Bangladesh thoroughly digital, by creating an enabling business environment that appeals to the younger sections of the population, in rural areas with improved physical infrastructure and communication networks to guarantee connectivity, an essential enabler to these farmers' networks.

[76] Iles, R. (2019). *The Future of Technology for Smallholder Farming in Poor Rural Conditions Bangladesh JOIKKO Social Franchise Case Study Report.* Report commissioned by VSO International. August.

3.4 Progress towards Outcome III: Improved diversity, consumption and utilisation

The objective of Outcome III is to improve diet quality and diversity as well as utilization through integrated short and long-term interventions for better nutrition and health. These interventions include promoting healthy diets, dietary diversity and food safety through evidence-based Nutrition Behaviour Change Communication (NBCC) and ensuring safe water, improved hygiene and sanitation (WASH) to prevent the risk of infections including foodborne illness that can affect food utilisation and nutrient absorption. Outcome III comprises of two programmes namely (III.1) Enhanced nutrition knowledge, promotion of good practices and consumption of safe and nutritious diets and (III.2) Optimised food utilisation through the provision of safe water, improved food hygiene and sanitation along with six associated sub-programmes. Table-5 presents the progress towards achieving Outcome III.

3.4.1 Assessment of progress towards achieving Outcome III

Table 5 - Outcome III: Selected performance indicators

CIP2 outcome proxy indicators	2015/16 Baseline	2018/19	2019/20	2020/21	Target	Source
National dietary energy intake (DEI) from cereals	70% (2010)	64% (2016)	…*	-	60% recommended 🟡	HIES, BBS
Proportion of children receiving minimum acceptable diet at 6-23 months of age	23% (2014)	33.7% (BDHS-2017-18)	26.9% (MICS 19)	35.5% (NMS-2019-20)	More than 40% by 2025 (NPAN2) 🟡	BDHS NMS
Proportion of households consuming adequately iodised salt (i.e. containing at least 15 ppm)	50.5% (National Salt Iodisation Survey, Bangladesh 2015)	…*	58.5% (MICS 19)	-	90% by 2025 (NPAN2) 🟡	BDHS,
Prevalence of anaemia among women of reproductive age (15-49)	39.7% (2015)	39.9% (2016)	…*	30.2% (NMS-2019-20)	Less than 25% by 2025 (NPAN2) 🔴	WHO, NMS
Minimum dietary diversity for women (using Minimum Dietary Diversity for Women (MDD-W)	46% (5 out of 9 food groups, 2015)**	…*	45% (NNS-FSNSP)	44.1% (NMS-2019-20)	75% by 2030 (MoHFW) 🔴	FSNSP NMS

**not available, ** Women Dietary Diversity Score*
The colour indicator shows the progress achieved: target reached 🟢; on track 🟡; off track 🔴 .

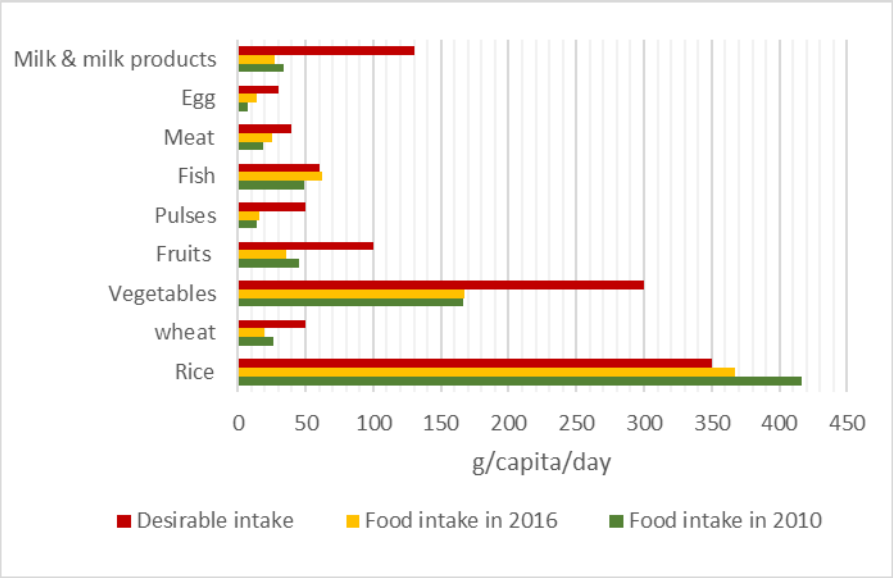
The target of dietary energy intake (DEI) from cereals was on track until 2016, but recent data are unavailable

In Bangladesh, cereals and rice in particular, continue to be the main source of dietary energy, even though the proportion of cereal energy in the diet is gradually declining. The proportion of dietary energy from cereals fell from 70% in 2010 to 64% in 2016, closer to the recommended 60% target.[77] The daily per capita intake of rice decreased from 416 g in 2010 to 367 g in 2016, still too high but in the right direction to reach the desirable norm of 350 g (Figure 9). Consumption of protein and micronutrient rich foods, including animal source foods and pulses, remained low. Animal source foods are rich in good quality protein and bioavailable micronutrients, especially iron, zinc and calcium. Even though the intake of these foods slightly increased between 2010 and 2016, it was below the desirable intake for meat, egg and milk. Fish consumption increased by almost a third from 43.8g to 62.6g while that of pulses remained

[77] Based on the BBS Household Income and Expenditure Surveys.

unchanged at close to 15g per capita daily, still less than a third of the desirable intake. Similarly, over the same time period, vegetable consumption remained steady and fruit consumption slightly dropped, both remaining significantly lower than the recommended intakes. In 2016, vegetable intake was only 167 g, just above half of the recommended intake of 300 g. Similarly, in 2016, fruit intake was only 36g, about a third of the desirable intake of 100g. Significant gaps between actual consumption and the Desirable Dietary Pattern[78] call for urgent attention to be given to promoting dietary guidelines for enhancing the demand for healthy food choices and diets. Issues related to the nutrient density of foods and total diet studies need to be given the highest policy attention. The supply and affordability of nutrient-dense[79] foods need to be enhanced in order to bridge the nutrient gap that prevails in consumption.

Figure 9: Consumption of major food groups in 2010 and 2016 compared to desirable intake (g/capita/day)



Source: HIES, 2016

While data is needed to assess the changes in dietary intake that have occurred since the 2016 Household Income Expenditure Survey (HIES), it is likely that any progress made will have been reversed, at least temporarily by the COVID-19 crisis. In Bangladesh, where most families' ability to eat depends on daily wages and where 87% of employment is generated by the informal sector, access to diversified foods and healthy diets will be markedly reduced. Street vendors and food sellers, especially in urban areas, face huge losses as panic-stricken city dwellers stayed at home and foods remained unsold during the lockdown phase.

[78] Quamrun, N., Choudhury,S., Faruque, Md. O., Saliheen Sultana, S.S. & Siddiquee, M.A. (2013) *Desirable Dietary Pattern for Bangladesh.* Final Research Results. NFPCSP Research Grant Initiative. Dhaka. FAO.

[79] Nutrient density is defined as the amount of different nutrients per 100 kcal of preparation.

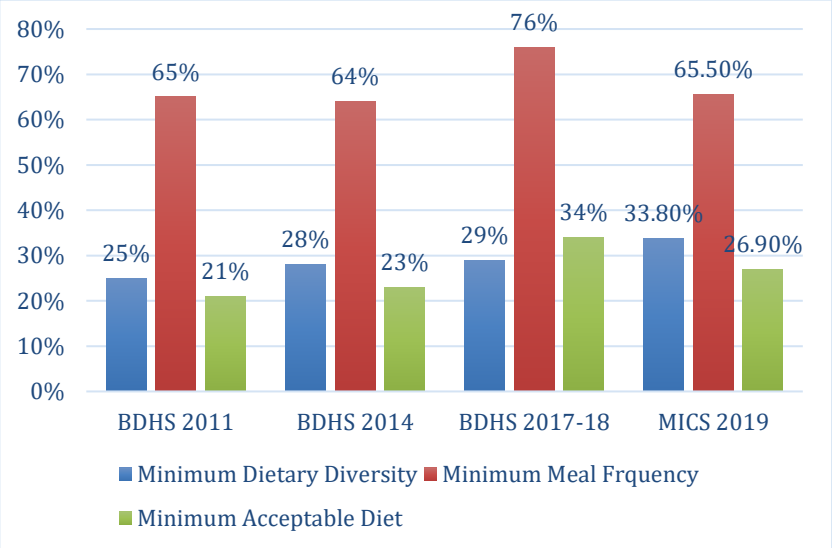
Improve situation of Minimum Acceptable Diets for children aged 6-23 months compared with the preliminary findings of National Micronutrient Survey 2019-2020

The Minimum Acceptable Diet (MAD) is one of the eight core indicators for assessing infant and young child feeding (IYCF) practices for children aged 6-23 months recommended by WHO[80] and UNICEF.[81]

Recent preliminary findings from the National Micronutrient Survey 2019-2020 shows that a improve situation in Minimum Acceptable Diet to 35.5% in 2019-20 from 27% in 2019 MICS Survey.

BDHS surveys show clear progress in children receiving MAD between 2011 and 2017/18 (Figure 10) although most of the progress occurred between 2014 and 2017/18 from 23% to 34%.

Figure 10 - Trend in minimum acceptable diet for children 6-23 months (Source: BDHS and MICS)



However, MICS-2019 Survey shows that 27% of children 6-23 are receiving Minimum Acceptable Diet (MAD), whereas the target of MAD is 40% by 2025 as per the NPAN2.

The MAD is a composite indicator of the Minimum Dietary Diversity (MDD) and the Minimum Meal Frequency (MMF). The MDD is a proxy indicator for nutrient density and micronutrient adequacy, while the MMF is a proxy indicator for the energy density in a child's diet. Despite improvements for both MDD and MMF in children's diets between 2011 and 2017, only 39% of the children aged 6-23 months received four or more food groups to meet the Minimum Dietary Diversity, while over three-quarters of them had the Minimum Meal Frequency (Figure 10). However, it is likely that these improvements may have been negatively impacted in the COVID-19 situation. The initial lockdown and subsequent restricted movement affected employment and incomes which in turn have reduced the access to a diversified range of foods needed for healthy diets, especially among women and young children. Poor IYCF leads to growth retardation and micronutrient deficiencies among children, especially when linked to low diet diversification and nutrient inadequacy in complementary feeding. Appropriate complementary feeding guidelines and improved nutrient-dense recipes through National Nutrition Services (NNS) should be promoted to enhance the quality, quantity, diversity and safety of complementary foods to improve child nutrition in the first 1,000 days of life.

Improvement of Adequately iodized salt consumption, however remains a challenge

Salt is adequately iodized when it is fortified with potassium iodate for at least 15 parts per million (ppm). Baseline data considering a National Salt Iodization Survey shows that only half of the population consumed adequately iodised salt in 2015, far-below the NPAN2 recommended target for 90% of the

[80] WHO/UNICEF (2017) *Global Nutrition Monitoring Framework. Operational Guidance for tracking progress in meeting targets for 2025.* Geneva: World Health Organization.

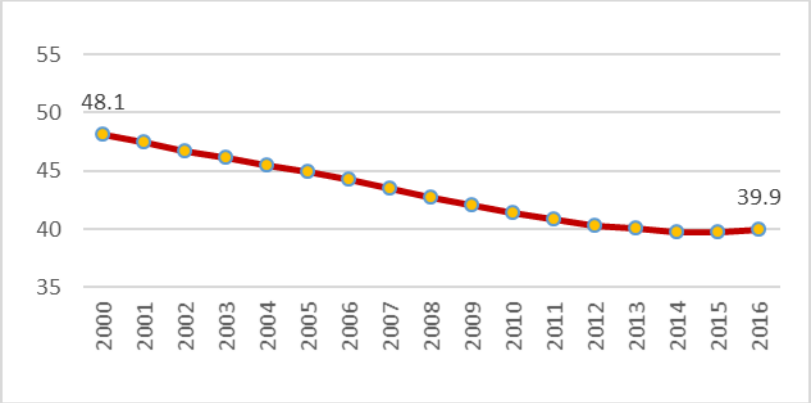
[81] UNICEF (2020) *Improving Young Children's Diets During the Complementary Feeding Period.* UNICEF Programming Guidance. New York. UNICEF.

population. More recent estimates of consumption of adequately iodised salt data from MICS 2019[82] show 58.5% of households consuming adequate iodised salt (i.e. minimum 15 ppm). Bangladesh is thus still far behind the NPAN2 recommendation. Quality assurance at the production level, along with routine chemical analysis in laboratories and on markets are essential to assess iodine adequacy in salt. Nutrition messaging for appropriate cooking and storage practices of iodised salt is also important. Actions to further promote the consumption of adequately iodised salt need to be scaled-up.

There was limited progress in reducing anaemia among women of reproductive age

Women of reproductive age (15-49 years) are at high risk of anaemia, especially during pregnancy. Anaemia impairs health and quality of life and increases the risk of maternal and neonatal adverse outcomes. Severe anaemia during pregnancy can increase the risk of maternal mortality, premature delivery, and can cause low birth weight and increase the probability of neonatal mortality. Although the prevalence of anaemia among women of reproductive age reduced from 48.1% in 2000 to 39.9% in 2016 and 30.2% in 2019-20 (Preliminary findings of the National Micronutrient Survey 2019-20). In 2012, the World Health Assembly endorsed the comprehensive implementation plan on maternal, infant and young child nutrition and set the global target for reducing anaemia in women of reproductive age by 50% by 2025. Following the NNP (2015) and other policy goals and targets, NPAN2 recommended the target for reducing the rate of anaemia among pregnant women to less than 25% by 2025. If this sluggish progress continues, neither the global nor the national targets for anaemia in women of reproductive age or pregnant will be achieved. Nationally representative data are not available regularly, so adequate measurements to estimate the current prevalence of anaemia needs to be scaled up. At the same time, the national deworming programme needs to be strengthened and vitamin C consumption increased to reach the target 25% by 2025. In general, acute infections, either viral or bacterial, can cause anaemia through other mechanisms. Given the vulnerability and risks of malnutrition in the COVID -19 situation, there is need to promote access to and the consumption of a healthy diet that contains protein and micronutrient rich foods (zinc, vitamin A, D and C) among others for ensuring immunity.

Figure 11 - Prevalence of anaemia (in %) among women of reproductive age (15 – 49 years)



Source: FAOSTAT, 2018

Minimum Dietary Diversity for Women (MDD-W) was inadequate as of the preliminary findings of National Micronutrient Survey 2019-20

The minimum dietary diversity for women (MDD-W) is a proxy indicator of micronutrient adequacy in their diet indicating the consumption of at least five or more out of ten food groups. The CIP2 has a target of 75% for MDD-W by 2030. Yet, less than half (44%) of the women had a minimum dietary diversity in 2019-20. Although regular data on MDD-W are not available, nationally representative food consumption and dietary assessment in 2017-2018 showed that 53.3 % of women in the reproductive age had a MDD-

[82] Carried by UNICEF and BBS.

W mean score of 5 out of 10 food groups.[83] These findings corroborate earlier findings of FSNSP and highlight the need to accelerate the diversification of diets for women. Scaling up the use of dietary guidelines for improved food diversity is essential to achieve this objective. Diet diversity tools validated with biomarkers of intake and micronutrient adequacy[84] need to be produced through the evidence to inform policy. The use of the updated 2015 Food Composition Tables (FCT) as an essential tool for food and agricultural planning can serve to orient and set nutrient targets in food production and guide diet planning for meeting consumption requirements and nutrient needs.

3.4.2 Policy challenges and recommendations for further actions

Improve Infant and Young Child feeding Practice

Improvement of Infant and Young Child feeding Practice is very essential for the reduction of undernutrition. Implementation of the existing Strategy on Infant and Young Child Feeding Practice is important. Research should be taken to find out the challenges or bottlenecks of the existing implementation process.

Develop and implement long-term national food planning to ensure nutritious and healthy diets

Long term planning for ensuring nutritious and healthy diets from a sustainable food system is an immediate need considering Bangladesh's population growth, demographic composition, and changes in dietary patterns induced by urbanization and income growth. This is important to estimate the gaps in availability, consumption and desirable intake and to take remedial actions through increased production, processing or trade. Food systems, especially in urban areas, are evolving to adapt to evolving food demands and transforming from traditional to modern with the increasing consumption of convenience/fast food. Desirable dietary pattern and nutrient targets should be used for diversified food planning, sensitize demand for healthy food and enhanced food supply.

Promote dietary diversity to enhance nutrient adequacy

Women during pregnancy, lactation and menstruation, and adolescent girls, who experience rapid physiological changes, require diets that are diversified, safe, adequate and rich in micronutrients. Government and non-government agencies have carried out numerous advocacy and awareness programmes on the promotion of dietary diversity. Targeted programmes must be scaled up to improve the diets of adolescent girls, pregnant and lactating women during their antenatal care (ANC) and post-natal care (PNC) sessions. The prolonged COVID-19 pandemic is likely to impact maternal and child nutrition, given the potential reduction in access to income and food, decrease in breastfeeding and possible increase in the use of breastmilk substitutes, exacerbated by COVID-19 related concerns (Box 4).[85] Higher incomes also do not automatically translate into a healthier diet. Contextual drivers that shape food systems also influence food choices, preferences and consumption behaviour. Implementation of dietary guidelines, nutrition education programmes and behaviour change communications (BCC) need to be integrated to every step of the food system including in nutrition-sensitive interventions to inform and influence food demand and promote healthy dietary behaviour and consumption.

[83] INFS /MUCH FAO (2018) *Food Consumption and Dietary Assessment Survey*. Dhaka.
[84] Nair, M.K., Augustine, L.F. & Konapur, A. (2015) *Food-Based Interventions to Modify Diet Quality and Diversity to Address Multiple Micronutrient Deficiency*. *Front Public Health.* 3: 277.
[85] https://www.who.int/news-room/commentaries/detail/breastfeeding-and-covid-19

Improve the consumption of fortified foods and its monitoring

Fortification of staple foods with essential micronutrients is a cost-effective intervention. This has been prioritised in the National Strategy on Prevention and Control of Micronutrient Deficiencies (NSPCMD 2015-2024). However, outreach, coverage and access to fortified foods by the targeted populations remain inadequate. The effectiveness of fortified rice in addressing anaemia and zinc deficiency was demonstrated among Vulnerable Group Development (VGD) beneficiaries in five districts of Bangladesh before and after 12 months of fortified rice distribution.[86] Particular attention needs to be given to identifying potential barriers to equitable access for all population groups needing adequately iodine-fortified salt. Strengthening the existing monitoring system, in line with the NSPCMD, is fundamental to track the consumption of adequately fortified foods to inform policy and programmes. It is also important to regularly assess the distribution of key micronutrient deficiencies such as iodine, vitamin A and zinc across regions and population groups to inform policy update. To this purpose, a National Micronutrient Survey and a specific National Iodine Deficiency Disorders Survey are indispensable.

Box 4 - COVID-19, maternal and child health and nutrition services

Women have been hardly hit by both macro and micro deficiencies in the wake of COVID-19. The pandemic reduced access to health services due to the initial closure of health facilities (ANC and PNC), which have potentially affected maternal health and nutrition and increased the risk of low birth weight, and maternal and child mortality. Reduced access to income and food may result in maternal malnutrition and COVID-19 related concerns might have led to reduced breastfeeding. With children having missed their essential vaccinations, there is a heightened risk for child infection and a synergistic impact on nutrition outcomes.

The allocation for the health sector for FY 2020/21 has been increased by 14% up to BDT 29,247 crore. The Directorate General Health Services (DGHS) has issued guidelines to health care providers, in order to continue providing nutrition services. In line with that, the mid-term review of the fourth Health Population Nutrition Sector Programme (2017-22) suggested to incorporate nutrition services along with the extended programme for immunization.

Source: BNNC Expert Committee on Food Security and Nutrition (2020) "*Determining the impact of COVID-19 on nutrition:*

Strengthen National Nutrition Services delivery through community clinics

The NNS is an operational plan under the Health Population and Nutrition Sector Development Program, implemented by the Institute of Public Health and Nutrition (IPHN) and includes several programmes to control micronutrient deficiencies. NNS promotes food-based approaches through BCC to control anaemia and enhance the production of bioavailable micronutrient-rich foods to enhance diets and improve nutritional status in general. Other interventions including breastfeeding, appropriate complementary feeding, increased intake of animal food, green leafy vegetables are being encouraged. Anti-helminths are procured routinely and distributed nationwide by NNS to control worm infestation. Lack of coordination in implementing multiple interventions using public health curative care facilities, limited preventive outreach platforms, inadequate logistics and supplies for nutrition-related services, inadequate training coverage of service providers at community clinics (i.e. Community Health Care Promoter) and poor outreach of services (i.e. Health Assistant) have been identified as the major

[86] Ara G., Khanam M., Rahman A., Ahmed T. *et al* (2019) *Effectiveness of micronutrient-fortified rice consumption on anaemia and zinc status among vulnerable women in Bangladesh*. Plos ONE 14 (1): e0210501.

challenges for NNS.[87] Despite the availability of ANC services at the community and outreach level, the rate of compliance to iron folic acid supplements is very low with only one-fourth of the pregnant and lactating women attending these services. It is recommended to strengthen the implementation of ANC, PNC, growth monitoring and promotion, NNS delivery involving community clinics targeted to children and women suffering from anaemia and micronutrient deficiencies. Within the multi-sectoral nature of NNS, linkages with nutrition-sensitive interventions under the Ministry of Agriculture (MoA) and the Ministry of Fisheries and Livestock (MoFL) also need to be strengthened.

[87] Shaha K.K., Billah M., Menon P., Arefin, S.E. & Mbuya, N.V.N. (2015) *Bangladesh National Nutrition Services: assessment of improvement status*. *World Bank Technical Report.*

3.5 Progress towards Outcome IV: Enhanced access to social protection and safety nets and increased resilience

Outcome IV of the CIP2 covers interventions to expand access to social protection and safety nets for vulnerable groups to protect their food and nutrition security before, during and after disasters. It includes two programmes: 1/ timely and effective disaster preparedness and responses through emergency food distribution and agricultural sector rehabilitation and mitigation measures, through three associated sub-programmes; and 2/ strengthened social protection and safety net programmes for targeted groups across the life cycle, including disabled and displaced populations, also through three associated sub-programmes.

3.5.1 Assessment of progress towards Outcome IV

Table 6 - Outcome IV: Selected performance indicators

CIP2 outcome proxy indicators	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
Proportion of population living below national poverty line, differentiated by urban and rural (SDG 1.2.1)	National: 24.3% Rural: 26.4% Urban: 18.9%	National: 21.8%E	National: 20.5%E	N/A	N/A	HIES reports BBS, GED
Proportion of population under national extreme poverty line (a) Rural and (b) Urban	National: 12.9% Rural: 14.9% Urban: 7.6%	National: 11.3%E	National: 10.5%E	N/A	N/A	HIES repors ,BBS, GED
Safety net programmes expenditures as % of GDP (SDG 1.3.1.)	2.08%	2.17%	2.54%	2.92%	3.10%	MoF/ GED

E: estimated
The colour indicator shows the progress achieved: target reached; on track ; off track .

Poverty reduction was on-track for the SDG 1 national target, but will likely be slowed by COVID-19

Poverty in 2018/19 was estimated by the Bangladesh Bureau of Statistics (BBS) to have further declined to 20.5% nationally, from 21.8% in the previous year. These figures are 10.5% and 11.3%, respectively, for the proportion of people under the extreme poverty line. Poverty estimates after the baseline are model-based, rather than survey-based, by extrapolating a linear trend between survey-based estimates in 2010 and 2015/16 (Figure 12). Even with a somewhat slower rate of decline after 2010, Bangladesh was still on-track to achieve before 2030, the SDG 1 Target 1.2.1 of reducing at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions - as indicated by the red line in Figure 12.

The lockdown resulting from the COVID-19 pandemic in 2020 led to sharp increases, in poverty depth amongst the already poor, and in poverty prevalence when previously non-poor households fell into poverty. The transitory shock turned into a longer-term crisis in poor households when the lockdown perdured. Many of the poor would rebound with the resumption of economic activity, but some would remain poor because they sold productive assets, accumulated unmanageable debts, were unable to re-finance migrant work, and even for some, their breadwinner died. An analysis conducted by BRAC in April 2020[88] across subgroups demonstrates that the hardest hit by the COVID-19 crisis are the poorest and

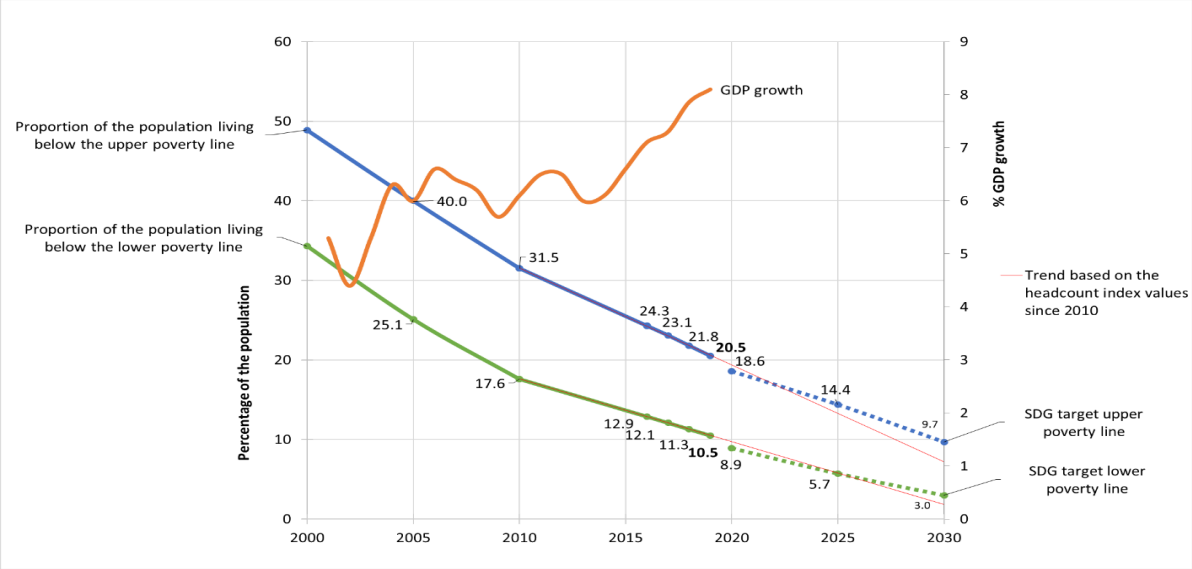
[88] Rahman, Z.H. & Matin, I. (2020) *PPRC-BIGD Rapid Response Survey: Poverty Impact of COVID-19*. 16 April

most marginalized - children, adolescent girls, young people and women living in urban slums, persons with disabilities, minorities, returnee migrants and refugee camps inhabitants.

The weight of safety net programmes in total GDP continued to rise

Government spending on safety nets rose to 3.10% of GDP in 2020/21, compared to 2.92% in the previous year, and represented 14.6% of the government budget, slightly up from 13.24% in the previous year.[89] The government categorizes its safety nets spending into social empowerment (mainly human development and livelihoods) and social protection (mainly transfers and protection), and the respective shares of these two components changed greatly from 40/60 in 2017/18 to 30/70 in 2018/19. The social protection component itself represented 10.1% of the government budget in 2018/19, compared to 7.8% in the previous year, but this includes civil servant pensions and Freedom Fighters' health and honorarium, which are untargeted to poverty, and excluding these items shows that the social protection budget was nearly static at 4.3% of the government budget in 2018/19, compared to 4.1% in 2017/18. Within this, food security related social protection was 2.7% of government spending in 2018/19, compared to 2.5% in 2017/18.

Figure 12 - Poverty prevalence, SDG targets and GDP growth



Source: Data from BBS

3.5.2 Policy challenges and recommendations for further actions

Enhance shock-responsive and anticipatory social protection

This action will promote the development of shock-responsive social protection and anticipatory social protection. It will build on Bangladesh's 2019 workshop on shock-responsive social protection[90], and on Bangladesh's 2020 experience of delivering forecast-based social protection before a major flood, which delivered cash and non-cash support in advance.

[89] GoB (2019 and 2020) *Social Safety Net Programmes Budget* (various years). Ministry of Finance.
[90] GoB. 2019. Symposium on Adaptive Social Protection: Technical and Policy Considerations. MoMDR. 2-3 September 2019. Dhaka

Ensure productive social protection coordinated with My Village, My Town

The Government has plans to stimulate rural transformation through investments under the My Village, My Town programme, involving 14 ministries and 20 agencies, which will extend modern civic amenities to every village. Since this is a multi-sectoral, multi-ministerial investment and development programme, coordination and cooperation from planning through to implementation will be crucial to ensure that productive social protection programmes make the best of the new opportunities, and thereby include the poor, and this action will ensure this. It is intended that by 2030 all upazilas will have a master plan. My Village, My Town aims to create employment through agriculture-related and non-agricultural small-scale village manufacturing workshops and rural growth centres.

Gear-up productive social protection for women

The Government will gear-up productive social protection for women that is well-designed to address the gender barriers underlying women's low labour force engagement. Productive activities will promote and support women's multi-dimensional role in agriculture which is crucial for the food and nutrition security of their families. The NSSS plans to consolidate the Vulnerable Group Development (VGD) and the Widow, Deserted and Destitute Women Allowance into a Vulnerable Women's Benefit (VWB) that will be more tuned to income-generation – and when consolidating the programmes, attention will be paid to ensure that unconditional food and cash transfers will be maintained for vulnerable women who cannot work.

Coverage expansion of seasonal employment programmes in line with NSSS

Seasonal employment programmes are essential for the whole period of this Plan of Action because the agricultural production cycle, particularly of rice, will continue to influence Bangladesh's economy. The Employment Generation Program for the Poorest (EGPP), Food for Work (FFW), Work for Money (WFM) and Test Relief (TR) will be continued – and in 2020/21, the four together will cover 74 lakh beneficiaries with a budget of 5723 crore taka.[91] Greater management attention is required to ensure that programme implementation coincides fully with the timing of lean seasons, and that programmes adjust better to year-to-year variations in seasons. The four programmes are implemented by MoDMR, and overlap with one another. In the near-term, MoDMR and partner agencies will explore whether these four programmes can be consolidated as part of reforms outlined in the NSSS. The purpose will be to harmonise the different targeting, administration and MIS systems, and fully implement digital payments. The four programmes support different kinds of public works, and MoDMR will re-focus a consolidated programme on disaster risk reduction, because if Bangladesh's rapid economic growth continues to reduce poverty in the next decade, then its remaining poverty will be increasingly due to disaster shocks and seasonality. The four programmes represent 6.0% of the social safety-nets budget or 1.0% of government spending or 0.18% of GDP in 2020/21, and this will be increased to ensure sufficient coverage, especially if linked to disaster risk reduction.

Continuation of direct food support and subsidized food supply to vulnerable communities

Direct food support needs to be continued to vulnerable groups who cannot work. The Government will continue the Food Friendly Programme (*Khaddya Bandhob Karmosuchi*), which provides subsidised rice to ultra-poor families twice a year during the pre-harvest months of March, April, September, October and November. The Government's Open Market Sales (OMS) in urban areas of subsidised foodgrains and other foods will be continued, and expanded year-on-year to meet the increased demand due to continued urbanisation, and the likely increased numbers of vulnerable informal sector workers. Moreover, to be more responsive to seasonality and other temporal dynamics, OMS operations will better incorporate the Government's urban food price monitoring data.

[91] GoB.2020. Social Safety Net: 2019-20 & 2020-21 Financial Year. Ministry of Finance

Develop a more rigorous approach to urban social protection

A more comprehensive approach to urban social protection will be developed. In the near term, this will focus on substantially increasing the inadequate coverage in urban areas through existing social protection programmes, and in the longer term it will develop greater opportunities for contributory social security, which are necessary complements to the public-financed social protection programmes.

Box 5 - COVID-19 and social protection in Bangladesh

COVID-19 and its prolonged impact exacerbated pre-existing needs for social protection and created new ones, some predictable and some less so. Social protection needed to be upscaled in three dimensions: the headcount of beneficiaries (incidence of need), the amount of benefits (depth of need), and the duration of benefits (chronicness of need). The magnitude of need was unprecedented.

Earnings in the informal sector, involving over 52 million workers[a], largely vanished with the 'stay-at-home' order on 26 March.[b] Fewer than 13 million workers had a monthly salary they could depend on, and the remainder had daily or weekly wages, including many white collar and service sector workers.[c] Blue-collar workers, previously not poor, such as in the garments sector, were suddenly unpaid or laid off.[d] Urban migrants and overseas migrants were unable to send remittances, slashing the incomes of the poor and nearly-poor, and at least 10 million returned home thus increasing the rural dependency ratio.[e] Harvesting and transport bottlenecks led to losses for rural producers of perishable fruits, vegetables fish, poultry and dairy.[f] Within weeks, staple food prices increased by 20-30%, eroding the real value of salaries and savings. As household spending focused on staples, producers of meat, poultry and fish lost incomes.[g]

Private transfers to the needy sprang up, but were localised, and Bangladesh's usually vibrant NGO sector was itself hamstrung by the lockdown, especially in the first weeks.[h] The onus on the Government's social protection system was ever more vital, and as the lockdown persisted, poverty depth, as well as its incidence, increased. One rapid survey covering 2,675 respondents reported household income drops of 75%, and a poverty incidence of nearly 90% by early-April 2020.[i] The Government swiftly promised cash and food transfers. Untargeted Open Market Sales from public rice stocks started quickly by 6 April at 10 taka per kg, a quarter of the market price, with an allocation of 0.74 MMT for three months of operations.[j] The GoB's foodgrain stock was 1.43 MMT on 31 December 2019[k], a significant reserve. The MoDRR and MoHFW, in consultation with a government-instituted Technical Committee, formulated essential food baskets that were calculated to meet the energy and protein requirements for emergency rations. Accordingly, as part of targeted safety net programmes, packages of fortified rice, rice flakes, lentils, molasses, fortified biscuits, and oil were distributed to bridge the nutrient gaps. This was complemented with nutrition messages to include eggs, animal source foods, fruits and vegetables for protein and micronutrients to help build/sustain immunity. The baskets and cash were rolled out to displaced/disaster affected groups, pregnant and lactating women and young children, and households affected by COVID-19. OMS was suspended on April 13 because of operational difficulties due to mass demand and the need for social distancing. The government switched to subsidised rice sales based on ration cards, increasing the number of cards from 5 to 10 million.[l]

A large telephone survey found that 14% of the urban poor and 5% of the rural poor had received Government assistance by mid-April, and that roughly as many asked for food transfers as cash transfers.[m] Broader access to safety net programmes was slow to appear. Even by mid-May, the expansion of coverage of cash transfers was still being developed; school-feeding was only just resumed; and Save the Children's telephone-survey found that 64% of poor rural and urban children reported their families were still facing significant food access problems and 87% had received no government support.[n]

Sources: a) BBS (2017) Quarterly Labour Force Survey 2015-16 estimated that 82% of male employment and 95% for female employment was in the informal sector; b) Prothom Alo (2020) *COVID-19 may Drive 5m to Poverty*. 15 April; Daily Star (2020) *Food relief should be distributed at the doorsteps*. 8 April; Islam, S.T. & Divadkar, Y.N. (2020) *How Bangladesh's leaders should respond to the economic threats of COVID-19* *World Economic Forum*, 13 Apr; c) BBS (2017) *Quarterly Labour Force Survey 2015-16*; d) Daily Star (2020) *370 RMG factories didn't pay workers*. 19 April; e) According to the National Telecom Monitoring Centre, after lockdown was announced on March 26, 10 million mobile phone subscribers left Dhaka, nearly half the city's population (Rashid, S. & Bin Khaled, N. (2020) *COVID-19 and public actions for the urban poor*. *The Financial Express.* 19 April); f) Wardad, Y. (2020) *Vegetable growers in dire straits*. *The Financial Express* April 18; Khan, N. (2020) *Eat vegetables, save farmers!*. *Daily Star* 19 April; g) FAO (2020) *Rapid Assessment on Potential Impact of COVID-19 Outbreak on Food and Agriculture System in Cox's Bazar*; Financial Express (2020) *Poultry and dairy need immediate succor*. 17 April; Wardad, Y. (2020) *Chicken, Eggs, Meat Hit 12-yr Low at Farm Level*. *The Financial Express*. 19 April; h) For example, the Red Cross Red Crescent started distribution of 41,000 food parcels in late-April, some four weeks after the nationwide lockdown (*COVID-19 Red Cross Red Crescent Situation Report* 1, dated 8 April 2020); i) BRAC (2020) *Rapid perception survey on COVID19 Awareness and Economic Impact; j)* Rashid, R. & Bin Khaled, N. (2020) *COVID-19 and public actions for the urban poor*. *The Financial Express*. 19 April; k) GoB (2020) *Bangladesh Food Situation Report 119: October - December 2019*. Ministry of Food; l) Daily Star (2020) *Don't despair, tackle crisis courageously*. 19 April; m) Rahman, Z.H. & Matin, I. (2020) *PPRC-BIGD Rapid Response Survey: Poverty Impact of COVID-19*. 16 April; n) Daily Star (2020) *Cash Aid to Poor: Govt initiative runs into snag over database*. 13 May; Daily Star (2020) *School Feeding Finally Resumes*. 13 May; Save the Children (2020) *Child Perception Survey on COVID19: Impact on Children*.

3.6 Progress towards Outcome V: Strengthened enabling environment and cross-cutting programmes for achieving food and nutrition security

Outcome V of the CIP2 comprises programmes to create an enabling environment for other 4 Pillars; and programmes cutting across all Pillars and that have been singled out to ensure they are given important attention. The enabling programmes are: improving information and data for evidence-based monitoring and adjustment of policies, programmes and strategies; and strengthening FNS coordination and governance, capacity building and strengthening, and leadership development across relevant stakeholders. The crosscutting programmes are improving food safety, quality control, certification, accreditation and assurance, and awareness development on food safety and hygiene; and reducing food loss on farm and off-farm at all levels and waste.

3.6.1 Assessment of progress towards achieving Outcome V

Table 7 - Outcome V: Selected performance indicators

CIP2 outcome proxy indicators	2015/16 Baseline	2017/18	2018/19	2018/19	2020/21	Target	Source
Establishment of high-level FNS focal points across core ministries	TT: 4 TWG: 8	TT: 4 TWG: 8	TT: 5 TWG: 5	TT: 5 TWG: 5	TT: 5 TWG: 5	5 functioning teams 🟢	FPMU
Process of establishment of FNS focal points engaged in policy monitoring is ongoing through regular TT and TWG meetings	32 (8 groups met 4 times)	10 local consultations involving TWG and TT	30 (5 groups met 6 times)	30 (5 groups met 6 times)	30 (5 groups met 6 times)	30 interactions 🟢	FPMU
Annual high-level FNS policy reports produced	1	1	2	2	2	1 🟢	BNNC, CIP2, SUN annual reports

R: Revised

The colour indicator shows the progress achieved: target reached 🟢 ; on track 🟡 ; off track 🔴.

High-level FNS focal points across core ministries continued to actively involved in policy monitoring process

The five Thematic Teams (TTs) - one for each CIP2 Pillar- continued to be a platform for FNS policy discussion and essential data gathering, thereby supporting the CIP2 monitoring process and the drafting of the national food and nutrition security policy of Bangladesh. These teams have continued to meet regularly in 2020/21, providing technical and operational supports towards the production of the MR 22. The Technical Working Groups (TWGs), originally established to assist FPMU in developing the CIP2 in 2016, also met in May 2020 in the last stages of the MR22 preparation to analyse the report and provide further inputs and comments as necessary. As in 2020/21, in the year under review, the target number of interactions through TT and TWG meetings and workshops, 30, was achieved. This energetic engagement in the CIP2 monitoring process by these focal points located across the Government ensures effective communications among the FNS stakeholders.

High-level FNS policy reports continue to be regularly produced

The official publication of the CIP2 at the beginning of 2020/20 was followed by the production of the first Monitoring Report of CIP2 (MR19) in June 2019. The CIP monitoring exercise has now become an

established process that mobilises FPMU and the TTs for nine months every year, starting from September, with an inception workshop where a roadmap towards the production of the report is finalized, monthly meetings with the TTs, and ending in June with its launch after the Food Minister's endorsement. This unique process is a shining example of successful coordination among 19 Ministries/Agencies towards coordinated nutrition-sensitive actions to improve nutritional outcomes. The CIP2 results framework, with a total of 109 indicators at goal, outcome and output levels, brings together a prosperity of information on the country's FNS status and progress towards SDGs that relies on spirited efforts by FPMU and the TTs to obtain yearly Government official data and information to monitor the evolution compared to baseline and previous years. The CIP2 monitoring process and methodology are now being effectively replicated and followed in the Bangladesh National Nutrition Council (BNNC) for monitoring the NPAN2 report, demonstrating a good example of cross-fertilisation of policy monitoring practices in the country. Policy challenges and recommendations for further actions.

3.6.2 Policy challenges and recommendations for further actions

Institutionalise FNS capability strengthening to respond to an ever-changing policy scenery

Some policy-level documents were prepared and disseminated in the year under review such as the Climate Smart Agriculture Investment Plan (CSAIP) in December 2019 which includes the Bangladesh Delta Plan 2100[92] (see Outcome I), where the reduction of food loss and waste (FLW) and assurance of quality and safety of agro-produces, including livestock and fisheries, have been identified as priority investment areas. The National Food and Nutrition Security Policy of Bangladesh (NFNSP 2020) was approved by the Cabinet and gadget notification published. The formulation of the Eighth Five Year Plan (2020-2025) finalized and published. The Bangladesh Food Safety Authority (BFSA) finalized one important regulations: Food Safety (Food Contact Materials) Regulations 2019[93] and drafted another three regulations: Food Safety (Withdrawal) Regulations 2020[94], Food Safety (Restaurant) Regulations and Food Business Operator Obligations Safety 2019 promulgated under the Food Safety Act 2013. The National Agriculture Policy 2018 (NAP 2018) was published in August 2018 with the clear aim of making agriculture safe and profitable achieving sustainable FNS with among others, particular emphasis on the reduction of postharvest loss, off farm loss and agro-processing activities and extension of postharvest technology to end-users. Nutrition-sensitive guidelines for use in the implementation of this policy were prepared by a technical committee of nutrition, agriculture and health experts under the leadership of the Additional Secretary, MoA in February 2020. *The Export Policy Order 2018-2021[95] was approved in November 2018*, with clear directions about the adoption of good practices to produce and export safe food.

FPMU, as well as all the Ministries and Government agencies that contribute to the production of FNS-related policy documents and their monitoring, require constant updating of their capacities, especially in light of the continually evolving policy landscape. New challenges to the achievement of FNS also keep emerging such as those associated with the effects of COVID-19 pandemic, the climate change impacts or with the displaced Rohingya population crisis. This calls for appropriate and versatile capacities to handle analyses of changes, for example in the results and budget of the five Pillars of the CIP2. For FPMU in particular, capacities to flexibly coordinate, plan, communicate and lead need to be able to provide operational and secretarial support to the many institutions (FPWGs, NC, FPMC) involved in the production and monitoring of the CIP2. The fact that the CIP2 is about nutrition-sensitive food systems means that it includes projects that are often implemented by Ministries not traditionally associated with

[92] GoB (2018) *Bangladesh Delta Plan 2100- Baseline Studies: Volume 4- Agriculture Food Security and Nutrition.* Eds. Alam, S., de Heer, J. & Choudhury, G. Dhaka. General Economic Division. Bangladesh Planning Commission.
[93] *Bangladesh Food Safety Authority (2019) Food Safety (Food Contact Materials) Regulation 2018. In Bangla*.
[94] Bangladesh Food Safety Authority (2020) *Food Safety (Withdrawal) Regulation 2018.* In Bangla.
[95] GoB *(2018) Export Policy 2018-2021.* Dhaka. Ministry of Commerce.

FNS. The role of TT members from such Ministries is supreme and they must be fully equipped to undertake their duties as TT members with adapted analytical skills. To this effect, Programme V.4. (Improved FNS governance, capacity strengthening and leadership across FNS relevant stakeholders) is essential to create the enabling environment required to implement and monitor the CIP2. Achieving FNS is a long-term endeavour for which the training that is needed to strengthen, upkeep, and adapt the capacities that are needed by FPMU, the TTs and TWGs should thus be institutionalised, rather than rely on projects.

Translate government and development partners' commitment into concrete actions

The implementation of the CIP2 involves a number of stakeholders. The many GoB Agencies contributing to the country's FNS are brought together through the institutional setup put in place to monitor and implement the CIP2 in the form of the TTs, TWGs and the FPWG. But while, as described above, the mechanism by which they meet regularly and organize their work is now well established, there is room for improvement. The continuous turnover in TT members due to regular officials' transfers means that institutional memory of the MR process and methodology is limited. Yet, experience has shown that members who have worked as TT members for several MR cycles can contribute much more efficiently. This allows their capacities to be built both through learning-by-doing but also through more traditional means i.e. short term/long term training in Bangladesh or abroad. The role of DPs is also crucial in implementing the CIP2 given their participation in project funding. Their continued engagement in the monitoring process is essential to ensure that ongoing and future investments are driven towards the prioritised needs of the country. For this, DPs must provide timely information on investments and share experiences of outcomes of projects.

Encourage non-state actors to participate in FNS-related policy and strategy development

The achievement of the CIP2 goal and SDG 2 requires contributions from all the food system's stakeholders – from Civil Society Organisations (CSOs) to Academia/Researchers and the private sector- and for this, an enabling environment needs to be created. Dialogue between these entities and the Government needs to be encouraged, and their participation in the development of regulations, national strategies and policies promoted, so that different perspectives, needs and constraints are taken into account. Coordination among the different actors will also help avoid duplications, help share resources including information and expertise, and exploit potential synergies. Creating an environment that enables the participation of all food system actors is required which also includes building capacities of those actors based on their profile and actual needs (see Outcome II).

Acknowledge and help enhance the role of the private sector in achieving FNS

The private sector is often referred to as the 'silver bullet' to finance Agenda 2030.[96] The private sector handles all trade of agricultural commodities and food -except for the government's Public Food Distribution System (PFDS)[97]- as well as the majority of its processing and marketing. Despite increasing recognition of the benefits of a more diverse diet for nutrition, the approach for private sector investments largely emphasizes the availability of food aspect of food security, putting less emphasis on improving people's access to a diverse diet.[98] The government needs to use the instruments it has on

[96] Global Health Advocates (2018) *Ending malnutrition: what role for the private sector? From prevention to treatment*

[97] de Brauw, A. , Waid, J. , Meisner, C. A., Akter, F. , Khan, B. F., Bhattacharjee, L., Alam, Md. N., Sultana, S., Uddin, Md. N., Himel, F.B., Byrd, K., Bari, M. L., Chowdhury, S., Thilsted, S. & Khondker, R. (2020) *Food systems for healthier diets in Bangladesh: Towards a research agenda*. *IFPRI Discussion Paper*. Volume 1902.

[98] IPES-Food (2016) *From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems*. International Panel of Experts on Sustainable Food systems.

hands, such as incentives and regulations, to guide and mobilise them toward responsible investments for improving diets and nutrition of the poor. This needs to happen within a strong and well-regulated public policy framework that can warranty clear development added value and ensure that investments are in line with development objectives. The operationalisation of a private umbrella that can bring together the multitude of private actors is also needed, hence the importance of associations such as the Federation of Bangladesh Chambers of Commerce and Industries, the Metropolitan Chamber of Commerce & Industry, Dhaka, and the Dhaka Chamber of Commerce and Industry.

4. Progress towards outputs for outcome I

4.1Programme I.1. Sustainable and diversified agriculture through integrated research & extension

Programme I.1 includes projects dealing with the sustainable production of both crop and non-crop based high value, diversified and nutritious food. It comprises three sub-programmes: research and technology development for nutrition-sensitive agriculture; development of technologies for climate change adaptation; and nutrition-sensitive extension programmes.

4.1.1 Progress towards achievements of Programme I.1

Table 8 - Progress towards achievement of Programme I.1

CIP2 output proxy indicators	Commodity / Item	2015/16 Baseline	2016/17	2017/18	2018/19	2019/20	2020/21	Source
Annual change in major crops' production	Rice	0.0%	-2.6%	7.3%	0.3%	0.2%	2.7%	BBS (Statistical Yearbook)
	Wheat	0.0%	-2.7%	0.0%	-7.5%	1.2%	5.4%	
	Maize	7.6%	23.7%	8.7%	8.6%	12.5%	2.5%	
	Potato	2.4%	7.8%	0.1%	-0.9%	-0.5%	2.9%	
	Pulses	-0.2%	2.3%	0.7%	-0.5%	1.3%	6.8%	
	Brinjal	5.5%	6.9%	1.7%	2.8%	5.1%	5.2%	
	Pumpkin	4.5%	1.3%	2.9%	2.6%	6.2%	4.7%	
	Beans	5.4%	6.9%	-1.9%	6.8%	18.1%	00	
	Lal Shak	3.0%	4.0%	10.0%	12.8%	-9.0%	6.6%	
	Edible Oilseeds	1.8%	1.2%	-1.4%	-6.0%	7.3%	5.7%	
	Banana	2.6%	1.1%	0.4%	2.8%	-1.8%	1.0%	
	Guava	3.8%	7.0%	5.3%	-1.9%	-4.6%	8.0%	
	Mango	14.1%	10.9%	-9.5%	4.6%	0.2%	-0.6%	
	Pineapple	1.6%	5.5%	-1.6%	4.3%	0.0%	-4.6%	
	Jackfruit	-2.8%	1.8%	2.4%	-3.5%	-3.5%	9.5%	
	Tomatoes	-11.1%	5.6%	-0.9%	0.7%	7.2%	7.7%	
	Carrots	10.8%	4.0%	14.5%	3.1%	10.5%	33.3%	
	Lemon	-5.5%	6.0%	-3.0%	0.0%	3.5%	39.0%	
	Sweet potato	1.7%	1.3%	-6.0%	-4.4%	4.2%	13.8%	
Number of improved new varieties released	Rice	10	6	11	8	13	10	BRRI, BINA, MoA
	Wheat	0	3	1	1	3	5	BARI & BINA, MoA
	Maize	2	2	1	0	2	1	
	Potato	10	6	2	2	10	1	
	Pulses	6	5	4	1	1	2	
	Vegetables	7	8	5	10	10	6	
	Edible Oilseeds	2	1	2	3	2	2	
	Fruits	1	5	4	4	2	3	
% of agriculture budget allocated to agricultural research		4.2%	6.3%	6.4%	4.2%		N/A	NARS
Direct gender budgeting as % of MoA revised budget		16.90%	47.1%	49.3%	44.86%	44.91%	47.54%	MoF
Production of seeds tolerant (MT)	Drought	1,623	3,504	2,649	4,130	5,210	23,451	MoA APA Indicator 2.5
	Submergence	7,730	12,110	12,624	15,010	18,309	9,457	
	Salinity	7,524	6,792	6,177	7,090	7,250	6,213	
Number of farmers trained on sustainable agriculture practices by DAE		1,577,000	1,545,000	1,630,000	1,810,000	1,705,000	350 (for due to VOVID 19)	DAE, MOA
Number of institutions delivering nutrition training across core ministries		5	5	5	5	5	5	BIRTAN, IPHN, BIRDEM, BARC, DAE

The production of different crops showed mixed trends

Rice production grew year-on-year dramatically change in 2020/21 (+2.7%) in contrast to the record witnessed in the previous year (+0.2%), but higher than in base year (2015/16). The production of Wheat rising within two years. The production of maize continued rising at a significantly incised 12.5% from 8.6% in the previous year in 2019/20, but this year it has come down to 2.5%. Concurrently, the production of potato significantly declined, but it increased from negative trend by 2.9.[99] (Table 8). The average growth of maize since the start of the CIP2 (2015/16 – 2020/21) was distinctively higher than in the period corresponding to the CIP1 (2007/08 - 2014/15) (Table 9). These trends suggest that maize is gradually replacing wheat which is explained by its higher yield, profitability and adaptability to Bangladesh's ecosystems.[100,101]

Table 9 - Average crop production growth rates

Crops	2007/08-2014/15 (%)	2015/16-20/21 (%)
Rice	2.31*	2
Wheat	7.96*	-4
Maize	10.69*	11
Potato	6.37*	1
Pulses	8.53*	3
Brinjal	3.44*	4
Pumpkin	4.20*	4
Beans	4.81*	6
Lal shak	2.02*	5
Oilseeds	5.87*	1
Banana	-1.78*	1
Guava	4.50*	3
Mango	3.67*	1
Pineapple	-2.37*	1
Jackfruit	0.70	1

*Significant at 10% level, **Significant at 5% level

Consistently with these production trends, the area under maize cultivation continued increasing, while for wheat, it reduced over the reference period (Table 10). Pulse production increased by 1.3% to 6.8% over the previous year. Sweet Potato, Carrots, Brinjal and Lal Shak promoted respectively by 13.8%, 33.3%, 5.2% and 6.6%, in 2020/21 year-on-year - reinforcing the positive trend of the previous year. In 2019/20 was negative trend for Lal Shak and potato. The areas under cultivation of oilseeds, and sugarcane have been reducing since the start of the CIP2 which may be explained by the rapid expansion in the cereal production.[102] The low production of pulses and oilseeds represents a worrying signal given their importance as a source of protein and micronutrients and will have an adverse impact on micronutrient intake, especially for the poor.

Table 10 - Average crop area growth rates

Crops	2007/08-2014/15 (%)	2015/16-2020/21 (%)
Rice	0.70*	1
Wheat	1.82*	-6
Maize	10.30*	8
Oilseeds	3.05*	1
Spices	4.81*	2
Pulses	8.22*	0
Potato	2.22*	0
Sugarcane	-3.05*	-4
Fruits	-1.88*	50**
Vegetables	0.70	2
Jute	8.44*	0

*Significant at 10% level, **Significant at 5% level

The production of vegetables reported in Table 8 rose in the year under review, in particular that of *carrots* (+33.3%). Fruit production, except for mango, pineapple, also accelerated, especially jackfruit, banana, and guava, bounced back up after a negative figure in 2019/20.

The production growth rate of all selected vegetables continued to grow on average over the period since the beginning of the CIP2 compared to the CIP1 period. For fruits, however, the production of banana and

[99] Mottaleb, K.A., Singh P.K., He X., Hossain A., Kruseman G. & Erenstein O. (2019) *Alternative use of wheat land to implement a potential wheat holiday as wheat blast control: In search of feasible crops in Bangladesh*. *Land Use Policy.* Volume 82. March. 1-12.

[100] Islam, Md. S., Abid-Ul-Kabir, Md., Chakraborty, B. & Hossain, M. (2017) *Review of Agri-Food Chain Interventions Aimed at Enhancing Consumption of Nutritious Food by the Poor: Bangladesh*. *LANSA Working Paper Series*, Volume 2017 No 12.

[101] Lightcastle Analytics Wing (2019) *Bangladesh Wheat Sector: Struggling with Demand-Supply Mismatch*.

[102] *Ibid.*

jackfruit witnessed significant growth. Others exhibited non-significant growth rates, meaning that their production either remained essentially unchanged or widely fluctuated. In terms of areas under cultivation, the amount of land dedicated to fruit grew yearly, on average, at a considerable rate since the beginning of the CIP2 (+50%), in contrast to the slight decline witnessed during the CIP1 period (-1.88%).

Production of most crops in the following seasons will most likely be affected by the COVID-19 crisis through disruption of normal planting, cultivating and harvesting activities during the extended lockdown, and the difficulties encountered in procuring inputs as required, although these effects will be mitigated by the measures promptly taken by the GoB to sustain food production.[103] Agriculture is working as one of the driving forces of the economy of Bangladesh as a result of the adoption of favourable agricultural policies and strategies by the government. Although food security is likely to be disrupted due to global corona disaster, food grains production and supply system may be disrupted, but Bangladesh did not have to face such problems due to timely decision of the government. The government is working tirelessly to build sustainable, safe and profitable agricultural systems to ensure food security. The government has been making all out efforts for the overall development of the agriculture sector in the light of Vision 2041, 8th Five Year Plan, National Agricultural Policy 2018, Sustainable Development Goals, Deltaplan-2100 and other planning documents. At present, the government has adopted short, medium and long term action plans to meet the future needs of the growing population, based on the agriculture sector's achievements in various emergencies, including the impact of COVID-19.

The release of new vegetables and oilseeds varieties accelerated

A total of ten new rice varieties were released in 2020/21, eight of which by the Bangladesh Rice Research Institute (BRRI) and two by the Bangladesh Institute of Nuclear Agriculture (BINA). This number compares to thirteen rice varieties were released in 2019/20, ten of which by the Bangladesh Rice Research Institute (BRRI), three by the Bangladesh Institute of Nuclear Agriculture (BINA). Eight rice varieties were released in 2018/19, five of which by the Bangladesh Rice Research Institute (BRRI), two by the Bangladesh Institute of Nuclear Agriculture (BINA) and one by Rajshahi University, eleven rice varieties released in 2017/18 and six in 2016/17.

BRRI's new varieties are: *BRRI dhan 96,97,98,99, 100, 101,* (submergence-tolerant) and *BRRI HYBRID-7,8*. The varieties released from BINA are: *BINA dhan 24* and *25* (saline-and submergence-tolerant). Additionally, Rajshahi University released one variety named *Rabi dhan* 1. Since the beginning of the CIP2, a total of 35 new rice varieties have been released. As of 30th June 2019, and since its inception, BRRI released 97 new varieties (91 inbred and six hybrid). By the first quarter of the following financial year, the seed certification agency had already approved five new varieties, namely *BIRRI dhan 93, 94* and *95*; *BINA dhan 23;* and *BAU 3*, which looks promising for this year.

[103] BBSnews.net (2020) *PM announces Tk 5,000cr package for agriculture over COVID-19*. 28 April and BER and ERD report 2021-22.

In 2020/21, the Bangladesh Agricultural Research Institute (BARI) released 25 new improved crop varieties: one for potato, one for maize two for pulse, 6 for vegetables, two for edible oilseeds and three for fruits; BINA released two new varieties of edible oilseeds. In this year 5 new Wheat variety are released. In this year the Bangladesh Wheat and Maize Research Institute released three new wheat varieties. Furthermore, the Bangladesh Wheat and Maize Research Institute established in 2017, released one wheat variety named *WMRI gom 2,3,4*. On the other hand BARI are released two new wheat varieties namely BARI GOM -34,35. Research activities for edible oilseeds and vegetables accelerated and 8 new varieties were released from this group, almost same the seven released in 2017/18. The release of edible oilseeds varieties same to 2 in the year under review. Overall, 30 improved non-rice new varieties were released in against 21 in 2018/19, 19 in 2017/18, 30 in 2016/17 and 28 in 2015/16.

Box 6 - Development and promotion of zinc-biofortified rice

Zinc-biofortified rice varieties are key to improving zinc intake by young children. Their consumption can contribute to reducing instances of diarrhoea, pneumonia and other childhood and pregnancy infections which is pivotal in ensuring normal human growth and development. HarvestPlus, together with BRRI and IRRI have worked to release seven zinc-biofortified rice varieties so far, with high yield and beneficial agronomic characteristics. Over 30 partners from the public, private and civil society sectors, including the DAE, BRRI, Bangladesh Agricultural University, local and international NGOs have contributed to the promotion of this rice, and have helped deliver the seeds of four zinc rice varieties to almost half a million farming households across 62 of the 64 districts in the country. As of November 2018, the total number of zinc rice growing and consuming households reached about 1.5 million with 120,000 bags of seeds distributed annually. PRAN, the largest food distribution company in Bangladesh, agreed to purchase zinc rice directly from farmers in northern Bangladesh and following a pilot, entered into a formal partnership with HarvestPlus to expand the project to 120,000 farmers and to sell zinc rice through their distribution.

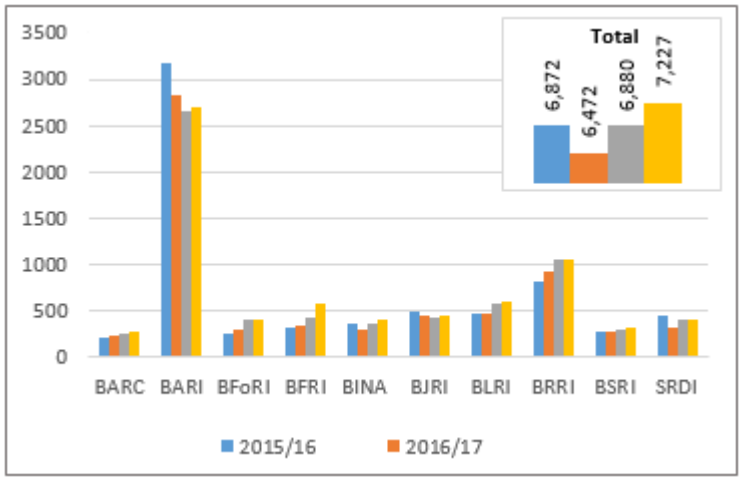
Source: Harvestplus

While no new zinc enriched rice varieties were produced in 2018/19, biofortification of rice with zinc is being promoted (Box 6).

The share of agricultural budget allocated to research institutes declined

The budget for agricultural research as a share of total agriculture budget dropped significantly to 4.22% in 2018/19 from 6.41% in the previous year, returning to its 2015/16 level. However, the annual budget of all research institutes rose in the year under review -BARC by 15%, BARI by 1%, BINA by 16%, BJRI by 4%, BRRI by 1%, BSRI by 6%, SRDI by 2%, BFRI by 34%, BLRI by 1% and BFoRI by 1%- except for the two largest crop research institutes, BARI and BRRI, whose budget remained unchanged (Figure 14). Since the onset of the CIP2 in 2015/16, the budgets of following institutes rose: BARC (+32%), BRRI (+31%), BINA (+16%), BSRI (+11%), BFRI (+75%), BLRI (+25%) and BFoRI (+68%). For the rest, it declined: BARI (-15%), BJRI (-11%) and SRDI (-10%). The total budget of these institutions rose by 5%.

Figure 14 - NARS institutions' annual budget (Million BDT)



Source: Data from Ministry of Finance (Data are not available in after FY 2016/17)

The share of gender budget in the total MoA budget substantially improved

Gender budgeting, or gender-responsive budgeting, promotes gender equity by allocating specific budgets to women and men beneficiaries in projects/programmes. Bangladesh ranked 48 in the Global Gender Gap Report 2018, in 2020 Bangladesh ranked 120 leading by far the South Asian region where other countries' rank is beyond one hundred. The share of direct gender budget in the total MoA revised budget substantially decreased to 41.46% in 2020/21 from 44.91% in 2019/20 as direct gender budget shot up to BDT 5,360.31 million from BDT 6312 million. Similarly, last year decreased to 44.86% in 2018/19 from 49.3% in 2017/18 as direct gender budget shot up to BDT 5,740 million from BDT 6707 million. Thus, several activities specifically targeted at recognizing and enhancing the role of women in agriculture was undertaken in the year under review. For example, credit facilities were provided to female farmers under the *Second Crop Diversification Project*. Concurrently, these beneficiaries were trained on how to manage their loan and become entrepreneurs. Under this same project, community groups were created comprising at least 30% of women and given the training to understand issues such as the functioning of commodity prices, to facilitate the marketing of their agricultural produce. The Department of Agricultural Extension (DAE) also trained over 300,000 women in technology of crop production, comprehensive pest management, post-harvest preservation and management of crops and marketing.[104]

The production of stress-tolerant seed accelerated

The increased frequency and erratic nature of crop submergence, saltwater intrusion and drought events are major causes of crop failure, consequent income volatility and persistent poverty among the small and marginal farmers in Bangladesh. Recent research findings from a field study[105] revealed that on average, a 1% increase in drought-affected area reduces *aman* and *aus* annual rice production per household by 1,382 and 693 kgs, respectively. To avoid this, submergence, drought-tolerant and short duration rice varieties must be developed and disseminated.[106] In 2020/21, DAE successfully popularized the cultivation of saline-tolerant rice varieties (*BRRI dhan 47, 53, 54,61 BINA dhan 8,* and *10*) in the coastal area; of submergence-tolerant varieties (*BRRI dhan 51, 52*) in flood-prone areas; and of drought-tolerant varieties (*BRRI dhan 7, 33, 39, 56,* and *57* in drought-prone areas. Moreover, wheat yields increased thanks to the expansion of heat-tolerant varieties (*BARI gom 26, 27, 28,* and *30*) and saline-tolerant varieties (*BARI gom 25*) by DAE.[107]

The number of farmers trained on sustainable agricultural practices continued to grow except COVID19 situation year

The operations of DAE - the largest provider of extension services - spreads over all the 64 districts of Bangladesh. In 2018/19, farmers trained by this agency on sustainable practices rose for the third year in a row, by 11% to 1,81 million individuals from 1,63 million in the previous financial year. It also trained 0.78 million farmers on modern technologies, of which 30% were female. But in this year (2020/21) due to COVID19 farmers trained 350 .[108]

[104] GoB (2020) *Budget 2020.* Dhaka. Ministry of Finance.
[105] Mottaleb, K.A., Gumma, M.K., Mishra, A.K. & Mohanty, S. (2015) *Quantifying production losses due to drought and submergence of rainfed rice at the household level using remotely sensed MODIS data*. *Agricultural Systems*. Vol. 137.
[106] *Ibid.*
[107] DAE (2021) *Annual report 2020/21.* In Bangla.
[108] *Ibid.*

The number of institutions delivering nutrition-related training remained unchanged

There have been no additions to the number of institutions across ministries delivering nutrition-related training since the beginning of the CIP2. They are the Bangladesh Institute on Research and Training on Applied Nutrition (BIRTAN), the Bangladesh Agricultural Research Council (BARC) and DAE, under the MoA; and IPHN and the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), under the Ministry of Health and Family Welfare (MoHFW).

4.1.2 Policy development, programmes and initiatives underway

Programme I.1 had a total cumulative budget of 676.5 million USD over the CIP2 period, corresponding to 4% of total CIP2 budget in 2018/19, of which 573.7 million USD (85%) was financed as of 30th June 2019. When 75% nutrition weight is applied to projects included in this programme, its budget is 507.4 million USD. The programme's budget dropped by 8% from the baseline. This was due to a strong reduction in the financial gap which did not fully translate into financed projects. However, when factoring in the 472 million USD of the programme's budget falling beyond the CIP2 period, the budget gap is more than offset. Seventy percent of the financed budget is from the GoB, with this share reduced to 59% in the post-CIP2 period.

Provision of incentives for expanding *aus* rice cultivation

To counter the shift by farmers from *aus* rice cultivation to high yielding irrigated *boro* cultivation, the GoB has launched an incentive programme to revive *aus* rice cultivation. In doing so, it wants to minimize farmers' dependency on underground water thus arresting the fall in the water level in the aquifer since *aus* rice requires less irrigation. There are encouraging results with evidence of improved cropping intensity as well as profitability and productivity of *aus* rice through this programme.[109] In 2018/19, BDT 375.5 million was distributed to 429 thousand farmers as an incentive to cultivate *aus* paddy in kharif-1 season.[110] The GoB has recently announced that it will provide seed and input support to farmers producing rice in the *aus* season in 2019/20. This BDT 41.8 million (USD 0.5 million) support package is expected to benefit close to half a million farmers across the country. Each farmer will receive a sum enabling him/her to buy five kilograms of seeds, 15 kg of DAP (diammonium phosphate) fertiliser, 10 kg of MoP (muriate of potash) fertiliser, BDT 90 for transportation, and BDT 20 for incidental expenses, for a maximum of 0.33 acre (one bigha) of land. It is estimated that this incentive will lead to the production of 156,452 MT of rice.[111]

National agriculture extension policy 2020 approved

The National Agricultural Extension Policy 2020 has approved. This policy aims to ensure the production of safe, nutritious and profitable crops through providing demand-based technology and information services to the farmers and entrepreneurs. This policy endeavours to provide integrated agricultural extension service of DAE, Department of Fisheries, Department of Livestock and Department of Forestry under one umbrella through a 'National Agriculture Extension System (NAES)'. Some of the strategies included in this document are to develop a decentralised response mechanism to region-wise demand for extension services. The different characteristics of farmers should also determine the type of extension response. Innovations such as e-agriculture and the use of agricultural input assistance cards will also be promoted.

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[109] Uddin, T.M. & A.R. Dhar (2018) *Government input on Aus rice production in Bangladesh: impact on farmers' food security and poverty situation*. *Agriculture and Food Security 7:14.*

[110] GoB (2019) *Ministry of Agriculture Annual Report 2018/19*. Dhaka. Ministry of Agriculture.

[111] USDA (2019) *Gain report- Bangladesh Grain and Feed Annual 2019.* BG 1903. USDA Foreign Agricultural Service.

Project launched to strengthen capacity to fight fall armyworm

Fall armyworm is a fast-reproducing species that devastates crops. While the level of infestation in Bangladesh is still relatively minor, more than 80 varieties of crops have already been attacked in 22 districts within just a few months.[112] This pest's preferred host is maize whose acreage, as seen above, is fast expanding. It is in this context that the *Fighting Back Against Fall Armyworm Project* which is supported by USAID and the University of Michigan has been launched[113], to train and support agricultural professionals on fall armyworm management strategies. As part of the project, the spread of the pest was mapped. The project engages members of the private sector including pesticide and seed companies, as well as agricultural dealers to ensure they are able to best advise farmers and suggest sustainable and long-term solutions. The project has advised over 755 agricultural dealers operating in impacted areas of Bangladesh, with another 1,000 being trained in January 2020.

New ways to disseminate nutrition-sensitive agricultural technology innovations

New ways to convey information on new agricultural technologies and nutrition to farmers are being explored. For example, in April 2019, *Farming Future Bangladesh (FFB)*, with technical assistance from the Islamic Foundation, organized a training of trainers session on agricultural innovations and their applications of agri-biotechnology for sustainable food security for imams.[114] Because religious leaders are powerful influencers, their role in social mobilisation can be very effective.

Expansion and popularisation of floating agriculture

As part of its climate change adaptation, the GoB is promoting the expansion of floating agriculture, and various NGOs have set up projects to this end. The floating garden hydroponics system was recognized in December 2014 by FAO as a Globally Important Agricultural Heritage System (GIAHS) for innovation, sustainability, and adaptability. BARI assists farmers in cultivating vegetables in abandoned ponds and water bodies to make floating beds. Fertilisers and pesticides are not needed with this method which lowers production costs and increases profit since organic produce is sold to consumers at a higher price. The jointly implemented by DAE and BARI *Research, Extension and Popularization of Vegetables and Spices Cultivation on Floating Beds Project* has been developing and disseminating floating bed agricultural technologies.[115] In 2018/19, the GoB distributed BDT 10.72 million to 4,105 farmers in 46 districts as incentive under seed distribution, preparation of floating seedbeds and harvesting and distribution of seedlings programmes during the *aman* season.[116] Despite some limitations and challenges, floating gardening and subsequent winter vegetable cultivation have been useful for improving nutritional security and household income.[117]

4.1.3 Needs for further actions under this programme

Exploit all-year-round production of fruits for nutritional improvement

Bangladesh, with its diverse soils, provides an ample opportunity to grow a variety of fruits throughout the entire year. To promote this, since 2014, DAE has been implementing the *Year-Round Fruit Production for Nutrition Improvement* project. Its objective is to make chemical-free and safe fruits available all year round so that the nutritional demands of the population are met. Since the inception of the project, more

[112] CIMMYT (2019) *Bangladesh increases efforts to fight fall armyworm.* 30 May.
[113] CIMMYT (2020) *New project strengthens capacity to fight fall armyworm in Bangladesh.* 22 January.
[114] Dhaka Tribune (2019) *Imams can play role in disseminating agricultural innovations.* 27 April.
[115] GoB (2019) *Ministry of Agriculture Annual Report 2018/19.* Dhaka. Ministry of Agriculture.
[116] *Ibid*.
[117] Irfanullah, Md. H., Azad, Md. A.K., Kamruzzaman K. A.K.M., & Ahsanul, Md. W. (2011) *Floating Gardening in Bangladesh: A means to rebuild lives after devastating flood* *Indian journal of traditional knowledge* 10(1):31-38.

than one lakh farmers have been given training on fruit cultivation through the horticulture centres. In addition, 21-22 lakh fruit trees were planted across the country during the period. Following the launch of the project, various fruits have become available most of the year. The cultivation of nutritious varieties such as dragon fruit, avocado, pomelo, watermelon, muskmelon, Burmese grapes or *lotkon*, jujube, hog plum, and Indian gooseberry or *amlaki* has largely increased in the last five years. These fruit trees are suitable socio-ecologically and nutritionally important. Sufficient daily intake of fruit[118] can potentially help alleviate micronutrient deficiencies and reduce the risks of a number of associated diseases. DAE is now planning to help to produce mango round the year and expand the production of persimmon and high-yielding oranges. It is important that this initiative continues but also, that measures are taken to ensure that these newly produced fruits are kept free from chemicals during and after production.

Speed up the establishment of farmer service centres at the union level

DAE is setting up *Farmer Service Centres* at union level to provide agricultural services for farmers under the pilot project *Farmer Service Centre and Transfer of Technology* in 24 unions of 21 districts. This facilitates farmers' access to such services as these were previously only available at upazila headquarters' level. The centres will also provide farmers with modern agricultural technological services. The establishment of such centres needs to be rolled out to all unions of the country so that all farmers can benefit from them.

Promote and expand crop insurance programme

In its latest Budget Speech, the GoB announced the introduction of crop insurance to save farmers from the financial losses caused by natural calamities.[119] In 2014, the testing of a Weather Index-Based Crop Insurance (WIBCI) through a pilot project implemented by the State-owned Shadharan Bima Corporation began. In 2015, the IFC, Green Delta Insurance and Business Finance for the Poor in Bangladesh (BFPB) also started a pilot project aimed at assessing the viability of WIBCI products.[120] The project has covered so far more than 15,000 farmers who possess 5,000 acres of land and 3,200 farmers settled claims to date which amounted to 40% of the premium.[121] The Asian Development Bank (ADB) has also piloted WIBCI for rice farmers in three areas of Bangladesh, including drought-prone Rajshahi. Because of the substantial financial exposure associated with correlated losses, the limited experience of insurers in this field and the lack of access to reinsurance on competitive terms, the feasibility of expanding agriculture insurance is still uncertain. Public-private partnerships could offer a workable format for scaling up.[122] Investments in weather forecasting and early warning system is vital for the development of risk financing products. Bundling agricultural insurance with farm credit and farm inputs should be considered to protect farmers in the event of crop failure. It will also help to stabilise farm incomes by restoring the credit eligibility of any given farmer for the following season.

[118] 100g/day.
[119] GoB (2019) *Budget speech 2019/20.* Dhaka. Ministry of Finance.
[120] Ahmed, W. (2019) *Crop insurance for farmers*. *The Financial Express.* 14 May.
[121] Rashid, M. (2019) *Implementing crop insurance*. *Daily Sun.* 29 May.
[122] Chatterjee, A.K. (2019) *The state of crop insurance in Bangladesh*. *The Financial Express.* 30 August.

Involve the private sector to increase resilience to the effects of climate change

The private sector can play a key role in increasing resilience to the effects of climate change. For example, the U.S. State Department-funded *Private Investment for Enhanced Resilience (PIER) Project* which is to last until 2020 creates pathways for private sector investment to strengthen resilience to climate change by demonstrating viable resilience investment opportunities. Examples of this include developing enabling legal frameworks; conducting a cost-benefit analysis for resilience investments in climate-vulnerable commodities; mainstreaming climate risk considerations into decision-making in local financial institutions; and promoting increased investment in resilience solutions in sectors such as agriculture, watershed protection, and insurance. Lessons from this project may inform government strategies to try and involve the private sector in building the resilience of the agriculture sector.

4.2 Programme I.2. Improved access, quality and management of crop agricultural inputs, including water and land

Programme I.2 covers the utilisation of productive inputs, including land and water, more sustainably and efficiently, in the context of an increasing demand of those productive inputs It consists of four sub-programmes on: quality inputs (seeds, fertilisers and pesticides); land fertility and land rights; surface water; and saline water intrusion.

4.2.1 Progress towards achievements

Table 11 - Progress towards achievement of Programme I.2

CIP2 output proxy indicators	Commodity /Item	2015/16 Baseline	2016/17	2017/18	2018/19	2019/20	2020/21	Source
Annual change in improved rice, wheat and maize seeds production		-0.3%	15.6%	10.1%	-1.0%	-2.5%	29.2%	MoA
Improved seeds supply (BADC, DAE & private companies) as % of agronomic requirements	Rice	41.5%	57.2%	60.8%	52.0%	44.2%	44.2%	MoA
	Wheat	58.2%	37.5%	53.7%	61.5%	29.0%	33.8%	
	Maize	27.1%	92.2%	97.1%	70.2%	97.9%	86.3%	
	Potato	7.7%	11.8%	13.1%	16.3%	15.5%	15.4%	
	Pulses	10.9%	6.5%	10.5%	10.4%	7.9%	6.7%	
	Vegetables	50.7%	83.1%	84.1%	60.9%	81.3%	80.9%	
	Edible Oilseeds	13.4%	15.5%	16.3%	8.4%	9.5%	10.6%	
Number of soil samples analysed at upazila and union levels		17,200	18,200	18,500	18,850	17,830	22,198	
Increased arable land under surface irrigation coverage (thousand ha)[123]		88.29R	45.76R	118.31R	28.29	30.05	115.42	MoA
Direct gender budgeting as % of MoWR revised budget		17.3%	49.51%	14.56%	35.01%	44.86%	52.47%	MoF
Supply as % of estimated demand[124]	Urea	81.7%R	94.6%R	96.7%R	101.6%	98.4%	91.8%	MoA
	MoP	97.5%R	97.5%R	92.9%R	85.1%	95.3%	91.6%	
	TSP	101.2%R	96.5%R	108.8%R	111.9%	98.1%	95.6%	
	DAP	95.1%R	77.6%R	81.2%R	84.8%	106.6%	101.9%	
Agricultural credit disbursement in billion BDT		176.46	209.99	213.94	236.16	227.5	255.11	Bangladesh Bank
Number of samples of fish feed tested for quality assurance		2,000	1,074	1,085	1,107	1,125	1,164	MoFL
Area of land affected by salinisation (hectare)		1,056,260 (2009)	…*	…*	…*	….*	….*	SRDI
Area of land under organic farming under DAE initiative (hectare)		…*	90	120	235	1020	5341	DAE
Water-use efficiency (USD/m^3) – Proxy for SDG 6.4.1		…*	3.0 (2017)	…*	…*	…*	…*	UN-Water
SDG 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources		…*	4%	…*	…*	…*	…*	AQUASTAT

*Notes: R=revised; *=Not available*

[123] The figures are recalculated as: surface water irrigation land in a year minus that of previous year, based on data obtained from BADC.

[124] For MR20, MoA made available the estimated demand for fertilisers which has replaced consumption previously used in MR19 as a proxy for requirements. Also, the change in stocks has been added to the calculation of supply for greater precision: production + import + change in stock (last-year minus current-year closing stock).

The production of improved seeds for wheat, pulses and vegetables slightly dropped

In 2020/21, the production of improved cereal seeds dramatically increased 29.2%. But the previous year in 2019/20, the production of improved cereal seeds dropped by 2.5% year-on-year, in last year (2018/19) also dropped 1% from previous year. following two consecutive years of substantial increases: 10.1% in 2017/18 and 15.6% in 2016/17 (Table 11). This number, however, conceals important variations as seen in Table 12. The supply of formal rice seeds, Bangladesh's staple, did increase by 33.1% in 2020/21 but it grew by a sizeable -41.7% for maize and 64.0% for oilseeds. Other notable changes have been the decline in the supply of wheat, pulses and vegetables seeds by 42.4%, 50.6% and 33.8%, respectively. In maize notable change in last year (2019/20) was increase 40.9% but this year (2020/21) is dramatically decrees -41.7% year-on-year.

Table 12 - Supply of formal seeds for selected crops ('000 MT)

Year	2019/20	2020/21	Change 19/20-20/21
Rice	158.31	210.78	33.1%
Potato	118.53	124.17	4.8%
Wheat	13.90	19.79	42.4%
Maize	11.28	6.58	-41.7%
Pulses	2.39	3.60	50.6%
Oilseeds	1.97	1.66	64.0%
Vegetables	1.98	2.65	33.8%

Table 13 - Contribution of different actors to seed production in 2020/21

Crops	Contribution to total requirement (%)		
	Public	Private	Self
Rice	35.8	24.2	40
Wheat	40.2	1.4	58.4
Maize	0.44	55.1	44.5
Pulses	11.9	0.4	87.6
Oilseeds	13.1	2.2	84.7
Vegetables	3.9	102.5	-6.3
Potato	4.5	11.5	83.9

In 2020/21, the supply of seeds through the formal system (provided by DAE, BADC and the private sector) increased for wheat, oilseed, vegetables and pulses, while it declined for rice, potato and maize (Table 12). The public sector concentrated on responding to the requirements of Rice, wheat, pulses and oilseeds: 35.8%, 40.2%, 11.9% and 13.2% of needs were fulfilled by this sector. On the other hand, the private sector met 55.1% of the needs in maize seeds, 102.5% of the needs in vegetable seeds and 24.2% of the needs in rice seeds (Table 13). The lion's share of total seed requirements - in particular for rice (40.0%), wheat (58.4%), pulses (87.6%), oilseeds (84.7%), potato (83.9%) and Maize (44.5%) - continued to be met by farmers themselves.

The supply of improved seeds to agronomic requirements dropped except for maize, Vegetables and edible Oilseeds

The supply of improved rice seed steady to 44.2% of agronomic requirements in 2020/21 and 2019/20 from 52.0% in 2018/19. In 2018/19 also declined 52.0% from 61% in 2017/18. In 2019/20 for wheat, there was also a marked dropped of 32.5 percentage points to 29.0%, but in this year (2020/19) little beat increased, it is 33.8%. For maize, there was also a marked dropped of 11.6 percentage points to 86.3%. This is likely due to a substantial increase in requirements as farmers are turning to maize seeds and production is near to being able to keep up with demand. For vegetable seeds, the supply as a percentage of agronomic requirements ignorable point decreased by 0.4 percentage points to 81.3% over the same period. This was the case for potatoes whose supply as a percentage of agronomic requirements are as almost same as 15.4% in 2020/21 of their respective requirements, down by 0.1 percentage points over 2019/20. But the previous 2018/19 it was increased from 2017/18 by 3.2% point. For other non-cereal

crops, the situation remained one of substantially low coverage of their agronomic requirements: this figure declined by 1.2 and edible oilseeds is increased 1.1 percentage points, respectively for pulses and edible oilseeds between 2019/20 and 2020/21 (Table 11).

Soil testing slightly intensified, but remains low

Testing farm soil is essential to assess soil nutrient content and pH which allows optimising the use of fertilisers, consequently maximising the production of healthy crops and prevents the contamination of soil by runoff and leaching of excess fertiliser. The Soil Resource Development Institute (SRDI) provides soil testing services to farmers and different organisations through its 16 permanent and 10 mobile laboratories across districts. Through soil testing and crop requirement-based balanced fertiliser application, yields can increase by about 20-25% for rice and by 15-20 percent for other crops.[125] In order to provide farmers with a location-specific quick, smart and efficient fertiliser recommendation service, SRDI has developed an online advisory system through which farmers can obtain advice directly through mobile phones. While the number of soil samples tested at both upazila and union level rose by 2% to 18,850 in 2018/19 but in COVID period it was decreased 5.4% in 2019/20, after COVID19 it is dramatically increased 24% in 2020/21, it was remains low compared to national needs.

The expansion of land under surface water irrigation slumped

If irrigation is to meet future crop water requirements, surface irrigation needs to be expanded to counter the problems associated with groundwater use such as declining water tables, deteriorating water quality, and increasing energy costs and carbon emissions. Yet, the annual increase in arable land under surface irrigation coverage reduced significantly to 28.29 thousand hectares in 2018/19, from 118.31 in 2017/18, 45.76 in 2016/17 and 88.29 in 2015/16 (baseline of the CIP2) but this year significantly increased 115.42 thousand hectares in 2020/21. In 2019/20, 30.05 thousand hectares increased from 28.29 in 2018/19. Surface water irrigation represented 26.6% of the total irrigated area in 2017/18 -from 23.9% in 2015/16- leaving scope for expansion.[126] In 2018/19, BADC re-excavated 560 km of canals, set up one rubber and one hydraulic elevator dam, and fielded 231 low lift pumps in order to make more surface water available for irrigation. Over the same period, the Barind Multipurpose Development Authority (BMDA) re-excavated 21.2 km of canals, constructed two cross dams and set up 202 low lift pumps.[127]

The share of direct gender budget increased sharply in the Ministry of Water Resources' budget

The share of direct gender budget in the total budget of the Ministry of Water Resources (MoWR) shot up to 52.47% in 2020/21, 7.61 percentage increase from previous year. 44.86% in 2019/20, down 9.85% points over the previous year but 35.01% in 2018/19, up 20.45 percentage points over the previous year. MoWR has taken various initiatives for women empowerment which includes increasing rural women's access and participation to irrigation schemes and water management initiatives which are proved to be determinants of improved household livelihood, nutrition and health.[128] It is also providing job opportunities for women in the excavation/re-excavation of canals and rivers and in the execution of about 25% of earthwork under Bangladesh Water Development Board (BWDB) projects; and distributing

[125] Agro and Farming Blog (2013) *About Services from SRDI – Soil Resource Development Institute, Bangladesh.* March 16.
[126] Calculated based on data obtained from BADC. Data up to 2017/18 are available.
[127] GoB (2019) *Ministry of Agriculture Annual Report 2018/19*. Dhaka. Ministry of Agriculture.
[128] Bryan, E. & El Didi, H. (2019) *Guest Commentary - Considering Gender in Irrigation: Technology Adoption for Women Farmers.* Chicago Council on Global Affairs.

45-50% of reclaimed *khas* land in different irrigation projects and in houses constructed in the island and wetland areas to destitute women.[129]

Urea and TSP supply was satisfactory, supported by increased fertiliser subsidies

In 2020/21, while the supply of urea, MoP, DAP and TSP (Triple Super Phosphate) was lower than their respective estimated demand. In 2019/20, while the supply of urea and TSP (Triple Super Phosphate) was lower, that of MoP and DAP was higher than their respective estimated demand. But in 2018/19, while the supply of urea and TSP was higher, that of MoP and DAP was lower than their respective estimated demand. In particular, urea supply[130] decreased 98.4% in 2019/20 from 110.6% in 2018/19 and reached 110.6% of its estimated demand after growing steadily from 81.7% in 2015/16, at the beginning of the CIP2 (Table 11). Over the same period, for MoP, this figure reached to 95.3% from 85.1% in the previous year and 92.9% in the first two years of the CIP2, while TSP supply down to 98.1% of its demand from 111.9% in the previous year. The supply as a percentage of estimated demand for DAP largely increased by 21.8 percentage points over the previous year to 84.8%, It is higher than the baseline value of 95.1%.

In 2020/21 Fertiliser subsidies grown by 10.5% up to BDT 74.21 billion, but in the same time urea reducing the most: by 15.8%. Fertiliser subsidies diminished by 10.1% in 2019/20, up to BDT 67.16 billion, with those for urea reducing the most: by 10.4%. While the share of fertiliser subsidies in the national budget rose to 1.3% in 2019/20 from 1.7% in the earlier year, it remained lower than 2.1% in the CIP2 baseline (Table 14). Sales of urea, TSP and MoP declined year-on-year by 3.3%, 11.5% and 1.1% respectively, while DAP sales rose by 26.1% in 2019/20. The GoB is encouraging DAP use which is a mixed fertiliser that includes MoP and urea. Thus, in December 2019, the government went on to lower the DAP price to BDT 16 per kg from BDT 25 per kg to reduce production costs. Accordingly, it budgeted BDT 8,000 million to subsidise DAP utilisation. In the same month, it also launched a *Fertiliser Recommendation Guide (2018)* aiming to ensure proper and balanced use of fertiliser in cropland to enhance crop productivity and protect soil quality.

The rising trend in agricultural credit disbursement continued

Table 14 - Urea and non-urea fertilisers' subsidies over the reference period

Year	Subsidies (billion BDT)			Change from previous year			% of fertilizer subsidies in national budget	% of urea subsidies in fertilizer budget
	Urea	Non-urea	Total	Urea	Non-urea	Total		
2015-16	23.37	39.29	62.66	-13.7%	-7.0%	-9.6%	2.1%	37%
2016-17	11.82	22.59	34.41	-49.4%	-42.5%	-45.1%	1.0%	34%
2017-18	16.95	31.91	48.86	43.4%	41.3%	42.0%	1.2%	35%
2018-19	32.99	41.74	74.73	94.7%	30.8%	53.0%	1.7%	44%
2019-20	29.54	37.62	67.16	-10.4%	-9.9%	-10.1%	1.3%	44%
2020-21	24.86	49.35	74.21	-15.8%	31.2%	10.5%	1.31%	34%

Agricultural credit disbursement decreased by 3.67% in the year under review, and by 29% compared to the baseline, up to 227.5 billion BDT. It exceeded the target set by Bangladesh Bank (BB) by 8.35% in 2018/19 up from 4.85% of a year earlier. Credit disbursement decreased the most for irrigation equipment (-18.5%), down to 2.7 billion BDT in 2019/20 followed by crop loans (-4%) down to 114.0 billion BDT, signalling increased support to agriculture. But credit disbursement increased the most for irrigation equipment (+19%), up to 3.2 billion BDT in 2018/19 followed by crop loans (+15%) up to 118.8 billion BDT,

[129] GoB (2019) *Medium-Term-Budget-Framework- Ministry of Water Resources 2019/20.* Dhaka. Ministry of Finance.
[130] Supply includes production, import and change in stock.

signalling increased support to agriculture mechanisation.[131] Due to outbreak of the Novel Corona virus, BB are instructed through the ACD circulated April 2020 to provide agriculture lone at 4 percent concessional rate (maximum) for cultivating grain crops, cash crops, vegetables and tuber crops as mentioned in agricultural and rural credit policy program. Against the disbursement of these loans, banks will be reimbursed at 5.0 percent as interest loss from BB. Major policy changes in BB credit disbursement contributed to the provision of more credit to farmers and include a 10%-share of credit reserved to the fishery sector; extension of the credit scheme to innovative and market-oriented systems such as floating agriculture, integrated farming, turkey rearing, and pen fish farming; and increased credit limit per acre of cultivated crops.[132] In the year under review, out of the 3.07 million farmers received agricultural and rural credit, 1.51 million were women who received an BDT 83.60 billions, BDT 6.76 billion was disbursed among about 0.102 million farmers through 15,522 open credit disbursement. Around 2.35 million small and marginal farmers received 163.00 billion BDT credit. Moreover, 0.21 billion BDT were disbursed to 7,179 farmers living in less developed areas, such as *haor* and *char* areas.[133]

Quality assurance for fish feed continues far behind the level witnessed at the beginning of the CIP2

The only way to ensure fish feed has the required balance of nutrients and no unwanted ingredients is to test the contents of a representative sample. Yet, the number of samples of fish feed tested rose gradually from 2016/17 to 2020/21 but still remain below the base year 2015/16. This amount increased by 3.47% from 1,125 in 2019/20 to 1,164 in 2020/21. More efforts are needed to boost these tests, especially in light of the existing issues with the quality of animal feed such as heavy metal contamination (see Programme V.1.). In January 2019, BFSA and the MoFL banned imports and sale of meat and bone meal (MBM) for fish and animal feed. Indeed, the latter may contain toxic chemicals such as chromium which can lead to cancer in humans. But a few months later, there was evidence of MBM in some imported fish and animal feed[134] which can only be detected through testing.

The area under DAE organic farming doubled

Organic farming[135] is becoming more popular, especially for vegetables, due to the growing evidence on the potentially toxic effects of pesticides directly on agricultural workers, and indirectly on consumers through residues in food and water. In addition, synthetic fertilisers may have a negative impact on water contamination, increased air pollution, soil acidification and mineral depletion. Media contact, attitude towards organic farming, profit and agricultural training significantly affect the adoption of organic vegetable farming in Bangladesh.[136] Moreover, the production of organic vegetables is proving to be profitable. BARI has been involved in organic farming through the *Asian Food and Agriculture Cooperation Initiative (AFACI)*. Also, several NGOs[137] are currently promoting organic farming through training,

[131] Bangladesh Bank (2019) *Annual Report 2019-2020*. Dhaka.
[132] Bangladesh Bank (2019) *Agricultural and Rural Credit Policy Program for the FY 2018-2019 - Press Release*. Dhaka.
[133] *Ibid.*
[134] Ovi, I.H. & Hussain, A. (2019) *Pork product detected in protein imported for use in fish and poultry feed*. *Dhaka Tribune*. 10 September.
[135] FAO/WHO Codex Alimentarius Commission define organic agriculture as 'a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity […] This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system'.
[136] Parvez, M., Hossain, K.Z., & Kabir, M.H. (2018) *Adoption extent of organic vegetable farming in Bogra district, Bangladesh*. *International Journal of Science and Business. 2*(1). 61-72.
[137] Hunger Free World, Unnyan Dhara, Action in Development, Friends In Village Development Bangladesh, Association for Land Reform and Development (ALRD), CARITAS, Action Aid, *Unnayan Bikalper Nitinirdharoni Gobeshona* (UBINIG), Community Development Association (CDA), Bangladesh Resource Center for Indigenous Knowledge (BARCIK), Concern International, B-Safe, Fukuoka Foundation, Voluntary Consumers Training & awareness Society (VOCTA).

demonstrations and awareness building. DAE continues to support organic farming and the area under organic farming under its purview rose sharply -by 334%- to a still low 1020 hectares in 2019/20.

4.2.2 Policy development, programmes and initiatives underway

As of 30th June 2019, cumulative investments to improve access, quality and management of agricultural inputs totalled 5,475 million USD which corresponds to 28% of the total CIP2 in 2018/19 and makes it its second largest programme. Its nutrition weighted budget was 4,106 million USD or 75% of its non-weighted budget. The largest part of the financed budget is mainly from the GoB (69%) and residually from DPs (31%), with these proportions reversed when considering the pipeline of 2,823 million USD mainly committed by DPs (91%). The programme channels 2,805 million USD beyond CIP2 period mainly through DPs commitments (71%). Notably, the Ghorasal Polash Urea Fertiliser alone represents 23% of the financed budget of this programme.

Supporting the availability of farmer-friendly machinery

Farmers in Bangladesh use machinery/implements for land preparation, crop protection and threshing on all cultivated land. A study found that tillage, irrigation, threshing, weeding and pesticide applications have been mechanised by 90%, 63%, 80% and 70%, respectively.[138] But for seed sowing, transplanting and harvesting crops, farm mechanisation appears to be a forgotten chapter. Only 1% of seeding and just 2% of harvesting are done using machines. As labourers have been increasingly becoming more expensive to hire, farmers experienced challenges in harvesting the ripened crops from their fields. Against this backdrop, the Cabinet-approved draft of the National Agriculture Mechanization Policy, 2019 aims to support the availability of farmer-friendly machinery through low-cost credit and machinery sub-contracting. The policy recommends a rationalized tariff structure for import and domestic manufacturing of farm machinery. To ensure optimum use of machines, it favours block-based cultivation by organizing growers for tilling, planting and harvesting. The draft policy proposes incentives to encourage the establishment of assembling industry. The use of renewable energy in mechanised farming is to be promoted and steps will be taken to encourage conservation agriculture. In addition, the expansion of mechanisation should be fast-tracked in preferential areas, such as *haor* areas, coastal zones, *barind* and hilly regions. Accordingly, the GoB has decided to mobilise BDT 30 billion to subsidise farmers in the purchase of machinery and has formed a committee to provide recommendations in order to speed up mechanisation. It will provide 70 % subsidies in *haor* and coastal areas and 50% in other areas for purchasing agricultural machinery. Moreover, under a farm mechanisation project of DAE, 1,045 power threshers, 1,769 reapers, 100-foot pumps, 361 seeders, 769 combined harvesters and 114 rice transplanters have been distributed to farmers in 2018/19.[139] Finally, a three days Agro Machinery Fair was organised at the Krishibid Institution Bangladesh (KIB) in April 2019, to create a venue for mechanisation demand and supply to meet.

Expanding Urea Deep Placement technology

Urea Deep Placement (UDP) has a positive impact on the reduction of GHG emissions and farmers' income through both increased yields and reduced fertiliser costs. UDP is currently utilized by 28% of rice growers and on more than one million hectares of paddy rice throughout the various seasons. UDP usage estimates show a 30% decline in fertiliser use and increase in yields by up to 20%, which more than offsets the

[138] Gurung, T.R., Kabir, W., & Bokhtiar, S.M. (eds.) (2017) *Mechanization for Sustainable Agricultural Intensification in SAARC Region*. Dhaka. SAARC Agriculture Centre. p. 302.
[139] DAE (2019) *Annual Report 2018/19.* Dhaka. Department of Agricultural Extension. Ministry of Agriculture.

additional costs associated with the application of briquettes, leading to enhanced profitability.[140] Furthermore, UDP technology contributes to creating off-farm income opportunities as small enterprises have been created locally, often by women, to make the briquettes used to apply the urea.[141]

Setting up energy-efficient and environmental-friendly fertiliser factory

As part of GoB strategy to increase the domestic production of chemical fertiliser, Bangladesh Chemical Industries Corporation (BCIC) has planned to build the Ghorasal Polash Urea Fertiliser Plant. On February 26, 2020, the Multilateral Investment Guarantee Agency (MIGA) issued a guarantee for $357 million to BCIC to cover a non-shareholder loan from The Hongkong and Shanghai Banking Corporation Limited of Hong Kong, SAR, China and MUFG Bank, Ltd. of Japan.[142] This new, modern, energy-efficient and higher capacity granular urea fertiliser factory to replace the existing urea fertiliser and polash urea fertiliser factories in Narsingdi, which are both less efficient in gas consumption and productive than the new one would be, with an expected production of granular urea and ammonia at 2,800 MT and 1,600 MT per day, respectively. This fertiliser factory uniquely features a recycling system for CO_2 emissions that will contribute to further increase - by about l0%- the production of urea fertiliser.[143]

Bangladesh Water Rules approved

The Bangladesh Water Rules (2018) have been formulated under the Bangladesh Water Act (2013) and approved in the reference year. This document provides details about enforcement mechanisms, such as compliance, protection and removal orders, imprisonment and fines/compensation, surface and ground -water withdrawal thresholds for individuals and organisations, clearance certificates required from an executive committee in order to be able to implement any water-related projects[144].

Construction of a subsidiary pump house under the *Ganges-Kobadak Irrigation Project*

The *Ganges-Kobadak Irrigation Project* (known as the G-K project and started in 1954-55) is a large irrigation system set up by the BWDB whereby water is lifted from the Ganges (Padma) and distributed by gravity canals. Lately, water extraction from the Ganges has become difficult in the dry season as water levels drop well below the level for which the pumps were designed. As a result, the irrigable area is not fully covered. Moreover, there is no arrangement for dredging the one million cubic meters of silt which deposit every year in the canal connecting the Ganges to the pump house. In order to address this issue a new project for the construction of a subsidiary pump house in Kushtia has recently started aiming at expanding the *G-K Project*'s command area.

4.2.3 Needs for further actions under this programme

Promote on-farm production and preservation of quality seeds for pulses, oils and spices

As the lion's share of the total seed requirement -particularly for pulses, oilseeds (see Table 13 above) and spices is still provided by farmers themselves, emphasis should be given to the production and preservation of quality seeds at farm level. Farmers' home-grown seeds are typically of poor quality in terms of purity, germination capacity, vigour, disease and insect resistance because knowledge about seed production technology, processing and storage is very limited. DAE has implemented a project titled *Farmers' level Quality Seed of Pulse, Oilseed and Spice Production, Preservation and Distribution* but more

[140] International Fertilizer Development Center (2017) *Rapid introduction and market development for urea deep placement technology for lowland transplanted rice : a reference guide.*
[141] FAO (2017) *Success stories on Climate-Smart Agriculture.*
[142] https://www.miga.org/project/ghorasal-polash-urea-fertilizer-project
[143] BCIC (2019) *Ghorasal Polash Urea Fertilizer Project (GPUFP) Invitation for expression of interest*
[144] GoB (2018) *Bangladesh Water Rules 2018*. Dhaka. Ministry of Water Resources.

needs to be done to provide training to farmers, especially for the enhancement of quality seeds of high-value crops, such as pulses, oilseeds and spices. Following the COVID-19 pandemic, however, it is likely that own seed production by farmers will have been severely affected and the focus may need to be on urgently supplying seeds to farmers to safeguard future production. In fact, at the time of writing this report, some 1.5 billion BDT had been allocated for the distribution of seeds and seedlings.[145] To this end, there is a need to promote healthy seeds to enhance the yield and nutritional quality of the produce.

Accelerate the use of organic fertiliser through better manure management

Bangladesh has the highest density of livestock in the world with 35.53 million households owning 48.15 million cattle[146] which results in a high concentration of livestock manure, responsible for methane and nitrous oxide GHGs emissions. Dried manure utilized for cooking and heating contributes to air pollution through carbon monoxide emissions and the discharge of both solid and liquid manure into water is responsible for the increase in the occurrence of illnesses such as diarrhoea.[147] Accordingly, the Integrated Livestock Manure Management (ILMM) Policy and Action Plan (2016-2030) aims to encourage livestock farmers to adopt improved manure management practices, such as the use of biodigesters and the creation of value-added manure products, and to facilitate the development of a manure market. The policy encourages farmers to set up societies and to build 'community' biodigester plants and/or environment-friendly manure storage and treatment facilities.[148] Biodigesters create conditions for the anaerobic decomposition of organic material such as cow dung and poultry litter and produce biogas and bio-slurry. The use of biogas reduces the burning of solid manure and other biomass fuels while the use of bio-slurry as fertiliser can increase crop yields and reduce costs. While financing options for the installation of biodigesters do exist through RDA under Ministry of Local Government, Rural Development and Cooperatives (MoLGRD), the BRAC and Grameen Shakti microfinance programmes and a government-owned financing agency, IDCOL (Infrastructure Development Company Limited) and Bangladesh Council of Scientific and Industrial Research (BCSIR), no digesters are collectively owned or managed by small-scale or landless farmers for lack of access to finance, technical knowledge, livestock and/or manure, and sufficient land.[149] Thus, the government, with assistance from local NGOs, should look into measures that may encourage farmers to install biodigesters. Likewise, the usage of other organic fertilisers to improve soil health and land productivity should be encouraged. To this end, the government has provided registration to eight companies for marketing organic/ bio-fertilisers in 2018/19.

Expand the usage of bio-pesticides

Bio-pesticides are pest management agents based on living micro-organisms or natural products and their usage can contribute to preserving the safety and nutritional content of the food. The GoB has taken initiatives to develop and spread on-farm bio-pesticides usage under the project *Development and Dissemination of Bio-pesticides Technologies for Vegetables, Fruits and Pan Crops*. However, research and extension activities on bio-pesticide-based integrated pest management technologies remain limited and need to be developed and disseminated with a focus on effective and cheap bio-pesticides. The government needs to develop a legal framework for commercialisation of bio-pesticide in order to make quality bio-pesticides available at a reasonable price. Involvement of the private sector may be also be encouraged in the commercial production and distribution of bio-pesticides with strict quality control

[145] BBSnews.net (2020) *PM announces Tk 5,000cr package for agriculture over COVID-19*. 28 April.
[146] BBS (2019) *Preliminary report of agricultural census 2019.* Dhaka. Ministry of Planning.
[147] GoB (2016) *Draft National Integrated Livestock Manure Management (ILMM) Policy.* Dhaka. Ministry of Fisheries and Livestock.
[148] Biskupska, N., Pravalprukskul, P. & Osborne, M. (2019) *Why Do Farmers Take up Biodigesters? An Assessment from Bangladesh*. *SEI Discussion Brief*. Stockholm Environment Institute. Stockholm.
[149] *Ibid.*

measures in place.[150] In the medium term, however, the GoB may need to focus its efforts on guaranteeing the availability of more traditional pesticides for farmers in cases where supply chains will have been affected by the measures taken to counter the COVID-19 pandemic.

Improve reservoirs system for rainwater harvesting

Groundwater extraction is increasingly higher than its recharge, thus depleting the groundwater table. For instance, groundwater in the Rajshahi district receded at a rate of 0.23 m/year over the period 2000 – 2014.[151] An alternative to groundwater extraction is rainwater harvesting in ponds and other reservoirs which may contribute cheaply and sustainably to improved water availability during the dry season. Furthermore, rainwater is free from arsenic contamination, salinity and other harmful infectious organisms and pathogens. Bangladesh is characterised by abundant rainfall averaging about 2,200 mm per year, 75% of which occurs between May and September, making this an appealing option. Under several projects, the government has constructed new reservoirs and repaired old ones for the conservation of rainwater but this has been limited in scale and may be expanded throughout the country.

[150] SAARC Agriculture Centre (2013) *Extent and potential use of bio-pesticides for crop protection in SAARC countries*. Dhaka.
[151] Aziz, M.A, Majumder, Md. A.K., Kabir, Md. S., Hossain, Md. I., Rahman, Niaz Md. F., Rahman, F. & Hosen, S. (2015) *Groundwater depletion with expansion of irrigation in Barind tract: a case study of Rajshahi district of Bangladesh*. *Int. J. Geol. Agric. Environ. Sci*. 3:32–38.

4.3 Programme I.3. Enhanced productivity and sustainable production of animal source foods

Programme I.3 aims at improving the availability of animal source foods to meet dietary needs while considering sustainability, by boosting production of meat, fish, milk and eggs through the development of profitable value chains and the promotion of responsible and sustainable livestock and fisheries. Animal source foods, which are rich in quality proteins and essential micronutrients, contribute to dietary diversity and nutrient adequacy for good nutrition and health.

4.3.1 Progress towards achievements

Table 15 - Progress towards achievement of Programme I.3

CIP2 output proxy indicators	Item	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
Percentage of areas protected	Coastal areas	1.2% (2013/14)	…*	…*	…*	…*	DoF, MoFL
	Marine areas	0% (2013/14)	2.05%	4.73%	4.73%	4.73%	DoF, MoFL
Percentage of wetland and natural sanctuaries maintained		1.7% (2014/15)	…*	1.9%	2.1%	2.1%	MoFL
Annual change in quantity of fish production		5.2%	3.5%	2.5%	5.3%	2.62%	DoF, MoFL
Fishery exports value as % of total export value		1.97%	1.39%	1.23%	1.39%	1.18%	DoF
Shrimp share in fishery exports (%)		84.0%	81.8%	73.0%	74%	66.8%	DoF
GDP from fishery sector as % of agriculture GDP, at constant prices 2015/16		20.53%	21.11%	21.47%	21.67%	21.87%	BBS
GDP from livestock sector as % of agriculture GDP, at constant prices 2015/16		16.69%	16.52%	16.48%	16.44%	16.41%	BBS
Growth rate of livestock GDP		3.19%	3.40%	3.54%	3.04%	2.94%	DLS
Production of	Eggs (million)	11,912	15,520	17,110	17,360	20,576	MoFL, BBS
	Milk (million MT)	7.27	9.41	9.92	10.68	11.99	MoFL, BBS
	Meat (million MT)	6.15	7.26	7.51	7.67	8.44	MoFL, BBS
Number of doses of vaccines produced (million)		236.39	246.26	274.86	277.48	311.6	DLS
Annual change in artificial insemination		6.27%	4.85%	3.78%	5.01%	(-) 4.96%	DLS, MoFL[152]
Number of farmers (in thousands) trained by	DoF	136.66	200.47	397.25	169	133	MoFL
	DLS	1,270	190	176	221	220	
Direct gender budgeting as % of MoFL revised budget		12.37%	13.17%	26.58%	40.47%	31.42%	MoF
Number of commercial registered farm	Poultry	80,421	80,812 R	81,324	84,735	86,482	MoFL, BBS
	Livestock	66,080	66,219 R	67,003	74,493	78,684	MoFL, BBS
	Fish and shrimp	…*	216,651	216,651	248,651	206, 399[153]	MoFL, BBS
Number of ponds		2,167,103	2,477,883	2,480,883	2,490,000	2,490,689	Fisheries Statistical Report

**: Not available; R: revised*

[152] Annual report 2020-21 (Fisheries and Livestock)
[153] Fin fish=19703 farms & shrimp=186696 farms

The extent of coastal and marine area protection remains minimal

While relatively less developed than other regions of Bangladesh, disaster-prone coastal areas hold great potential in the access they have to marine and mangrove natural resources.[154] This could play a major role in supporting the livelihoods and food security of the relatively poorer local communities. Coastal areas' socio-economic systems are centred around fisheries. However, the scarcity of large-scale vessels restricts industrial fishing in the deep-sea area, consequently increasing the pressure of artisanal fishing operations in the continental near shore within 40m depth.[155] This has contributed to the deterioration of marine habitats, migratory routes, fish spawning and nurseries. Out of the total 47,291 km^2 of the *coastal* zone in Bangladesh - or 32% of the country[156] - only 1.2% was a protected area as of 2013/14. This is still too low, as increased protection could contribute to sustainable coastal development which is essential to avoid over-exploitation of coastal ecosystems. As of 2020/21, out of the 118.8 thousand km^2 of *marine* areas of Bangladesh, only 4.7% was protected[157]; this protected area is as same as was in previous two years, despite a 2.05% rise from 2017/18. The limited coastal and marine area protection reflects the emphasis on preserving the livelihoods of poor local fishermen communities over environmental conservation. However, protection of these areas falls within the preservation of the Bay of Bengal marine ecosystem and as such needs to be strengthened within a regional and transboundary perspective. To this end, the approval of the USD 15 million grant for the *Bay of Bengal Large Marine Ecosystem (BOBLME)* project by the Global Environmental Facility (GEF) and led by FAO (2018) was a positive achievement.[158] While the first phase of the project revealed the challenges of a joint management plan among countries with often conflicting agendas, it certainly contributed to foster transboundary cooperation. As a result, Bangladesh, India and Myanmar have agreed on an Exclusive Economic Zone (EEZ) system in the Bay of Bengal. However, its implementation remains very challenging: overfishing remains a problem and in Bangladesh, fishermen often do not comply with the 65-days annual ban to protect spawning fish and rejuvenate fish stocks.[159]

Wetland and natural sanctuaries are also rare

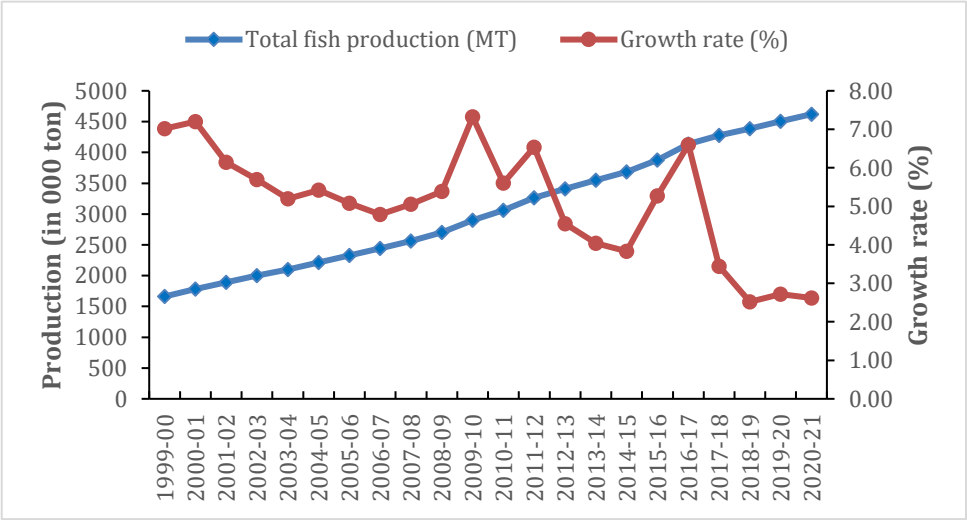
Wetland areas and natural sanctuaries provide an ideal habitat for native species of animals and plants, and thereby contribute to preserving wildlife, biodiversity and the protection of endangered species. The limited expansion of such sanctuaries since before the CIP2 - by a mere 0.20 percentage points (in four years), to 1.9% in 2018/19, and the same amount of expansion (0.20 percentage points) caused in next year (2019/20), but remained unchanged (2.1%) in 2020/21 of all waterbodies- calls for renewed efforts in this regard.

[154] IUCN (2015) *National Framework for Establishing and Managing Marine Protected Areas (MPAs) in Bangladesh*. International Union for Conservation of Nature. Dhaka. Bangladesh Country Office.
[155] *Ibid*.
[156] Ahmad, H. (2019) *Bangladesh Coastal Zone Management Status and Future Trends*. *Journal of Coastal Zone Management.*
[157] Chowdhury, H.A., Humayun, N.U.M. &Mondal, M.K. (2019) *Blue Economy: Department of Fisheries Initiatives in the Management of Marine Fisheries Resources*. National Fish Week 2019.
[158] thethirdpole.net (2018) *Eight countries come together to protect Bay of Bengal*. 4 July.
[159] thethirdpole.net (2020) *Lines on water cannot save Bay of Bengal fisheries*. 15 May.

Fish production growth slowed down for three consecutive years

Fish production remains mainly driven by aquaculture (56%), followed by capture (28%) and marine fishing (15%) with these proportions remaining substantially unchanged year-on-year. Fish production increased by 2.7 times since 2001/02 up to 4.6 MMT in 2020/21, by 2.6% year-on-year (Figure 15) for Government's active initiatives in this sector by implementing result oriented specific programs for sustainable fisheries management through innovation and dissemination of environment friendly new fisheries technologies). However, the growth trend has recently slowed down to 2.6% in 2019/20 from the highest growth rate 5.3% in 2019/20 since the CIP2 baseline (Table 15), mainly due to increased feed price, higher interest rate of institutional credit, and COVID-19 pandemic situation. Nevertheless, per-capita consumption has increased by 1.6 times over the last two decades, from 14.1 kg per year in 2000[160] to 22.84 kg per year in 2020[161], which was the highest since the base year 2015-16.[162]

Figure 15: Fish Production and Growth rate



Production is likely to have been severely affected by COVID-19 as fish spawn, fingerling, shrimp and post-larvae were either unsold or sold at very low prices during the lockdown. Government hatcheries tried their best to maintain fish seed production but an extended disruption in the supply of raw materials was likely to close down private hatcheries[163].

The value of fisheries in total export value declined

Fisheries' export value in total exports reduced to 1.18% in 2020/21 from the CIP2 baseline 2015/16, and this export value is the lowest ever since the CIP2 baseline. The share of shrimp in total fishery export value also declined to 69% from 84%, over the same reference period. This trend has several explanations: the ban on imports of fish treated with certain antibiotics by a number of countries (Southern Shrimp Alliance, 2018)[164]; the low competitiveness of Bangladeshi Tiger and Galda shrimp against the cheaper Vannamei variety in a context of weaker prices; and an abundant international supply associated with a slower demand and global reduced economic growth.[165] This is worrying in that Tiger and Galda shrimp

[160]Toufique, K.A. (2015) *Analysis of fish consumption and poverty in Bangladesh*. Dhaka. Bangladesh Institute of Development Studies.
[161]GoB (2020).Bangladesh economic review 2020. Finance division, Ministry of Finance.
[162]GoB (2016) *Preliminary report on Household Income and Expenditure Survey (HIES)*. Dhaka. Bangladesh Bureau of Statistics.
[163] FAO (2020) *FAO COVID-19 Rapid Assessment of Food and Nutrition Security in Bangladesh.* Dhaka.
[164] Southern Shrimp Alliance (2018) *2018 Begins with Bangladeshi Shrimp Refused Entry for Banned Antibiotics and Indian Shrimp Refused Entry for Salmonella*. 5 February.
[165] FAO (2019) *Food Outlook – Biannual Report on Global Food Markets.* May and November 2019. Rome.

constitute Bangladesh's most important agriculture-based export, accounting for more than 70% of total overseas earnings.[166]

Fisheries' contribution to agricultural GDP slightly increased

Fisheries are the second largest sub-sector of agriculture worth BDT 824,570million.[167] The contribution of fisheries to agricultural GDP slightly increased to 21.87% from 20.53% (at constant price 2015/16) over the reference period (2015/16 – 2020/21) and remained the main driver of production diversification. This increase is mainly due to improved aquaculture productivity, stemming from improved pond aquaculture productivity to 5,129 kg/ha in 2020/21 from 4,332 kg/ha in 2015/16 and consequently improved production to 2.09 million MT in 2020/21 over the same period[168]. Among the pond species, the production of major carps and exotic species increased from 1.19 million MT in 2015/16 to 1.42 million MT in 2018/19, which has been dominating fish production.[169] However, the slower growth in total production partly attributed to the 4.77% reduction in the production of pangas and tilapia after 2016-17.[170]

Livestock's contribution to agricultural GDP hardly varied but livestock growth rate progressed

Livestock's contribution to agricultural GDP was 16.41% in 2020/21, which was the lowest since base year 2015/16 and a slight (0.18%) less than that of previous year. The contribution of this sector is gradually decreasing over the last four years (since the beginning of the CIP2) (Table 15). However, The livestock GDP growth rate consistently rose up to 3.5% in 2018/19 at a slower pace from 3.2% in the baseline, and then gradually dropped to 2.94% in last year (2020/21) which was the lowest over the last CIP2 period, especially for world pandemic COVID19 situation (Table 15). The slower and sometimes negative growth rate witnessed is likely to be explained by several factors: the drop in production of small-scale commercial poultry farms - accounting for 81% of commercial poultry farms - which were particularly affected by recurrent outbreaks of Highly Pathogenic Avian Influenza over the last 10 years[171]; and increase in feed prices which translated into higher production cost. For example, the cost of maize, which constitutes 55-60 % of poultry feed, rose from BDT 16.11 per kg in 2006 to BDT 19.46 per kg in 2018, although a 10% tax exemption in maize and soybean meal import helped dampen this rise in costs.[172] The 500 million USD World Bank *Livestock and Dairy Development Project (LDDP, 2019-2023)* is likely to contribute to improving the productivity and sectoral value addition for this sector, especially for dairy and beef production.[173]

[166] Holland, J. (2019) *Bangladesh seeks more buck for its bagda*. Global Aquaculture Alliance.
[167]GoB (2020) *Bangladesh Economic Review 2020*. Dhaka. Ministry of Finance.
[168]GoB (2002 and 2020-21) *Yearbook of Fisheries Statistics of Bangladesh.* Dhaka*.* Department of Fisheries. Ministry of Fisheries and Livestock.
[169] Ahmed, M. F., Kabir, M. A., Kari, J. A., *et al*. (2019) Limnoecology and carp fish species peak spawning, timing in haor basin of Bangladesh. *Malaysian Applied Biology 48(3).*
[170]GoB (2017 and 2018) *Yearbook of Fisheries Statistics of Bangladesh.* Dhaka*.* Department of Fisheries. Ministry of Fisheries and Livestock.
[171]Rimi, N.A., Hassan, M.Z., Chowdhury, S., Rahman, M., Sultana, R., Biswan, P.K., Debnath, N.C., Islam, S.K.S. & Ross, A.G. (2019) A Decade of Avian Influenza in Bangladesh: Where Are We Now?*Tropical Medicine and Infectious Disease.* 11.
[172] The Financial Express (2018) *Poultry Feed Ingredients See Cut in Import Duty*. 8 June.
[173] World Bank (2018) *Project Appraisal Document Livestock and Dairy Development Project.* Report No: PAD2500.

Egg, milk and meat production improved but milk production still remains largely insufficient

In line with the trend witnessed since the beginning of the CIP2, in 2020/21, the production of egg, milk and meat moderately increased by 18.55% to 20.58 billion, by 12.27% to 11.99 MMT, and by 10.04% to 8.44 MMT, respectively (Table 15). Egg and meat production covered an estimated 119.8% and 116.6% of

Table 16 - Eggs, milk and meat production, demand and per capita availability, demand and supply coverage in 2020/21-

Products	Production	Demand	Coverage (%)
Egg	20.58 billion (124.58/year/head)	17.18 billion (104/year/head)	119.79%
Milk	11.99 MMT (198.85 ml/day/head)	15.07 MMT (250 ml/day/head)	79.56%
Meat	8.44 MMT (139.97 gm/day/head)	7.24 MMT (120 gm/day/head)	116.57%

** population: 16 crore 52 lakhs (BBS, population census 2022)*

Source: Ministry of MoFL: Annual Report 2020.

domestic demand (Table 16), while milk production covered only 79.6% of estimated domestic demand.[174] The Bangladesh Bank dairy loan scheme at a 5% interest rate has been contributing to the positive progress of the livestock sector since 2015. This USD 23.53 million refinancing fund is to encourage dairy farming and cut malnutrition and milk powder import bills.[175]

In spite of the world pandemic COVID-19 situation, Bangladesh earned self-sufficiency in egg and meat production, while Bangladesh is far behind to achieve self-sufficiency for milk production.

The introduction of world-renowned improved breeds of broiler and layer strains has played a vital role in increasing poultry productivity.[176]Therefore, milk production needs further improvement to bridge the 20.4% gap between domestic production and demand. In particular, the growing modern dairy production value chain which currently covers only 15% of the dairy sector has a strong potential for adding value to the dairy industry.[177] According to World's Poultry Science Association Bangladesh Branch, the poultry sector is expected to start exporting eggs and poultry meat by 2024, especially to the Middle East which is a sizeable market for halal meat.[178]

Livestock and poultry vaccine production rebounded

In 2020/21, the production of vaccine increased to 311.6 million doses by 12.3% from 2019/20, and by 31.8% from the baseline – it shows an increasing trend over the over since the launch of the CIP2. The boost in the production of vaccines both by government and private companies responds to increased demand from farmers who are becoming more aware of the importance of vaccination for their livestock

[174]GoB (2019) *Livestock Economy at a Glance 2020/21.* Dhaka. Department of Fisheries. Ministry of Fisheries and Livestock.
[175] Bangladesh Bank (2019) *Re-financing scheme*. Dhaka. In Bangla.
[176] Rahman, M. S., Jang, D. &Jum Y. C. (2017) *Poultry industry of Bangladesh: entering a new phase*.*Korean Journal of Agricultural Science*. Volume 44 Issue 2.
[177] FAO & UNIDO (2019) *The Dairy and Beef Value Chain in Bangladesh*. Draft Report. May.
[178] WPSA-BB (2019) *Bangladesh Heading Towards Safe Poultry Production & Export*. Dhaka. World's Poultry Science Association – Bangladesh Branch

and poultry. A total of 15 poultry vaccines and eight small- and large animals' vaccines are currently available in Bangladesh.[179] These vaccines ensures the livestock health and their production.

The rate of artificial inseminations accelerated over the last year

The artificial insemination shows a negative growth (-4.96%) in 2020/21. Production of liquid and frozen semen also decreased to 4.4 million doses in the reference year from 4.7 million doses in 2019/20. In 2020/21, the number of inseminated cows increased by 26.8% from the CIP2 baseline but decreased by 1.4 from the previous year (2020/21), up to 4.4 million, and crossbred calves increased by 38.7% and 11.2% from the CIP2 baseline and previous year (2019/20), up to 1.6 million, respectively.[180] A number of private companies such as American Dairy Limited, BRAC and Lal Teer are producing raw and frozen semen in addition to the public sector.[181] A slight decreased in semen production in 2020/21 than previous year calls for further action for artificial insemination promotion.

Number of farmers trained by DoF decreased while those trained by DLS remained static

In 2020/21, while the number of farmers trained by the Department of Fisheries (DoF) decreased to 133 thousand from 169 in the previous year, those trained by the Department of Livestock Services (DLS) remains almost static at 220 thousand (Table 15). The training provided by the DoF was the lowest in 2020/21 since the baseline year (2015/16), and the training given by the DLS remained static to the previous year but much lower than the base year (1270) and next year (2016/17, 1440 thousand. Nevertheless, it is obvious that the training of farmers is positively correlated with their production. To ensure new technological uptake and adoption by farmers, training programmes need to be strengthened.

The share of gender budget allocation over MoFL total budget trippled

Gender budget allocation in 2020/21 more than tripled compared to the CIP2 baseline, at 41.5% of the total MoFL budget. The share of the direct gender budget reduced to 31.4% in 2020/21 from 40.5% in the previous year but was above all other years since the baseline year. This reflects the continuous efforts made by this ministry to recognize the role and potential of women in this field of agriculture. For example, the provision has been made in the national budget specific to this ministry to include at least a quarter of women as beneficiaries in various development projects as part of gender mainstreaming in fish cultivation and management.[182]The increased participation of women empowers them and scales up their social position.

The number of registered poultry and livestock farms rallied

In the year (2020/21) under review, the number of registered farms for poultry and livestock rebounded to 86,482 and 78,684 from 84,735 and 74,493 in 2019/20 respectively. But, the registered shrimp and fish farmers decreased by 17% to 206,399 in 2020/21 from the previous year (Table 15). However, it is worth noting that only the relatively larger size farms are counted. For example, the farms having below nine cows, 19 goats or sheep and 1000 broilers or layers or ducks need no registration. Thus, there seems to be a gradual increase in the size of poultry and livestock farms.

[179]GoB (2018) *Guidelines on Animal Vaccine*. Dhaka. Directorate General of Drug Administration. Ministry of Health and Family Welfare.
[180]GoB (2019) *Annual Report 2020-21*. Dhaka. Ministry of Fisheries and Livestock. In Bangla.
[181]GoB (2015) *Bangladesh Delta Plan 2100 Formulation Project, Livestock Baseline Study*. Dhaka. General Economic Division. Planning Commission.
[182]GoB (2019) *Chapter 10: Ministry of Fisheries and Livestock*. Bangladesh Budget. Dhaka. Ministry of Finance.

The number of ponds continues to rise

The number of ponds remained similar to the year 2019/20 at 2,490 thousand in 2020/21, but 14.9% higher compared to the beginning of the CIP2. This slow but steady expansion in the number of ponds is likely to have contributed to the observed increase in aquaculture production.

4.3.2 Policy development, programmes and initiatives underway

Fisheries sector

Action plan to develop the Blue Economy

The MoFL has adopted an action plan and implementation strategy for the development of marine fisheries resources which is to cover the years until 2023.[183] Some of their major targets are to identify major breeding areas and commercially viable sea fish species; to build capacity through the inclusion of marine science in university curricula; to arrange research and training on marine ecosystem; and to establish new marine reserve areas.

Assessment of current fish stocks and aquatic resources

The marine research vessel, Dr Fridtjof Nansen, carried out a survey in Bangladesh from 2 to 17 August 2018 to gather information on the current stock of fish and other aquatic resources which are feared to be overexploited. This supports the establishment of the maximum sustainable yield, the highest level at which a natural resource can be utilised up to its regeneration capacity. This vessel is a unique platform for knowledge generation and capacity development: it houses seven different laboratories packed with high tech equipment. This work was carried out as part of the EAF-Nansen programme titled *Supporting the Application of the Ecosystem Approach to Fisheries Management Considering Climate and Pollution Impacts* which is implemented by ERD, FAO and the Norwegian Institute for Marine Research (IMR).

Enhancing marine and coastal fisheries

The World Bank funded *Bangladesh Sustainable Coastal and Marine Fisheries Project(2019-2023),* with a total budget of USD 281.60 million, aims to increase coastal and marine fisheries' contribution to the economy, poverty reduction, and environmental stability. It will achieve its target by enabling activities for sustainable fisheries sector investment and growth, improving infrastructure and production practices, empowering communities and developing livelihoods in 75 upazilas of 16 coastal districts spread over a geographical area of 43,291 km^2 inhabited by a total population of 33.77 million.[184] This piloting phase (2017-18) of this project successfully worked on enabling sustainable fisheries investment and growth and improvement of infrastructure and fisheries production practices.

Incentivizing fish culture and capture

A 20-year master plan on *haor* development was approved in 2012, where 22 fishery projects were proposed accounting for USD 594 million to increase the culture and capture of fish production.[185] To accelerate the achievement under this master plan, various ancillary initiatives have been taking place including the establishment of the *Haor* and *Char* Development Institute in 2018 to improve the individual capacities and thereby sustain *haor* agriculture development.[186] To promote the production of capture

[183]GoB (2018) *Marine Resource Management of Bangladesh: Action Plan and Implementation Strategy*. Dhaka.Ministry of Fisheries and Livestock. In Bangla.
[184]GoB (2018)*Sustainable Coastal and Marine Fisheries Program (SCMFP).*Dhaka.Ministry of Fisheries and Livestock. In Bangla.
[185] DBHWD (2012) *Master Plan for Haor.*Bangladesh*Haor* and Wetland Development Board. Bangladesh.
[186]*Haor* Institute, Bangladesh Agricultural University. Website under construction.

fisheries, specially hilsa and shrimp, the government provides food incentives to around 0.4 million fishermen during the of 65 days fish harvesting ban. In addition, the government is continuing the waterbody re-excavation project accounting for USD 34.37 million in 229 *upazilas* under 53 districts to remove 7.66 million m^3 soil. Further, the proposal for extension of this project until 2021 with an additional USD 51.56 million budget is underway in the Ministry of Planning.[187]The project was extended for the 2nd time up to June 2022 and the revised budget was fixed to Tk 4090 million (totally GoB funded) and the project area was extended to 349 Upazilas of 61 districts.

Promoting non-traditional aquaculture for export markets

Non-traditional forms of aquaculture are being developed in different parts of Bangladesh. For instance, the project on the *Adoption of Innovative Technology: Seed to fattening of mud crab (Scylla olivacea) and health management in Bangladesh condition (2018-2021)* explores the export market potential of crabs which offer good micronutrient density. Bangladesh Fisheries Research Institute (BFRI) also started the *Conservation, Propagation and Culture of Mussels and Snails (2017-2021) Project* aimed at developing an economically viable technology towards the culture of oysters and snails. A pearl culture development and extension project was conducted between 2012 and 2019, aiming to expand the technology to rural women, farmers and entrepreneurs. To promote emerging sectors with export potential including non-traditional aquaculture products such as eel and crab, since 2019, the GoB has started providing 10% cash incentive on selected items, in accordance with the export-led economic growth strategy of the country.[188]A sum of Tk 18.31 billion was released in favour of Bangladesh Bank to provide incentives/subsidies to the local exporters for the 1st quarter (July-September) of FY 2020-21.[189].

Developing cluster models of shrimp farms

The Bangladesh Shrimp National Action Plan (BSNAP), which is underway, will enable DoF to promote modern production capabilities for black tiger shrimps (*bagda*) and advocate measures to ensure that export markets' safety and traceability requirements are met. To reach these objectives, this document proposes the introduction of a cluster farming model which consists in grouping shrimp farms who use common land resources for farming. By acting collectively, these clusters of farmers can receive a better price for their produce without the involvement of middlemen. DoF has planned three phases, the first ending in 2020 by which time 1,050 clusters comprising 26,250 farmers should be formed. By 2030, the end of the third phase, the number of clusters should be 2,075 clusters, with 51,875 farmers involved and 20,750 hectares of production sites.[190]

Development of low-cost aquaculture feeding approaches

Keeping the price of fish feed low is a key challenge for cultured fish production in Bangladesh. Over the last decade, efforts have been made to develop a new low-cost feeding system that would allow farmers to profit while still guaranteeing consumer safety. The Wageningen University and WorldFish have been trialling in Bangladesh (and Vietnam) a novel aquaculture feeding concept under the *Nutrition Pond Project (2014-2019)* that exploits pond ecosystems to encourage farmed fish and shrimp to ingest naturally occurring food (such as phytoplankton) alongside feed. While still a pilot, this system has the potential to reduce both production costs and environmental impacts.[191] The rice-fish system which is

[187]GoB (2019) জলাশয় সংস্কারের মাধ্যমে মৎস্য উৎপাদন বৃদ্ধিপ্রকল্প

[188] Dhaka Tribune (2019) *What is cash incentives on exports*. 17 June.

[189]Financial Express (2020). Tk 18.31b cash incentives for exporters. 22 July.

[190] Holland, J. (2019) *Bangladesh seeks more buck for its 'bagda'*. Global Aquaculture Alliance.

[191]Layzell, C. (2019) Aquaculture in action: reducing the need for feed. *The Fish Site*. 24 January.

promoted by some as a way around the scarcity of land and water resources, also allows farmers to use home waste and homemade feed such as waste rice as fish feed which can reduce the cost.[192]

Livestock sector

Registration of farmers and feed sellers

The feed industry has steadily grown because of increasing consumption of meat, eggs, and fish. Over 400 domestic mills are meeting up to 96% of annual poultry feed demand with the rest being met by imported feed or homemade feed-mix.[193] Half of these mills operate without registration which renders quality checks challenging. The DLS has therefore taken the initiative to bring all poultry farmers and feed sellers under registration to try and ensure safe and good poultry farming practices for sound public health.[194]

Launching the largest livestock project in Bangladesh

The World Bank *Livestock and Dairy Development Project (LDDP)* was officially launched in December 2019 with the aim to improve climate-resilient productivity growth, enhance market access, and improve risk management among smallholder farmers and agro-entrepreneurs, by providing support for climate-smart production systems, farmer empowerment and commercialization.[195] Under annual development programme, 19 development projects was implemented with a cost of 128.322[196] million USD to ensure the sustainable production of milk, meat and egg for achieving self-sufficiency along with creating employment opportunity, strengthening marketing system and value-addition of animal source products.

Conservation and improvement of livestock breeds

To enhance the climate resilience and sustainability in the livestock sector, a number of projects on the improvement of indigenous genetic stock (buffalo, goat and native cattle) were underway during 2018/19. In continuation with the first phase of *Buffalo Development Project (2010-2017),* the second phase of the project (2019-2020) is ongoing with a total estimated budget of 19.2 million USD to develop a highly productive and reproductive potential buffalo breed through insemination to increase milk and meat production. A 4.9 million USD project was also initiated in 2018 to improve and extend the native Black Bengal goat breed throughout the country. As for the large ruminant sector, the improvement of native cattle has been promoted through the *Breed Upgradation through Progeny Test Project* since 2003 till 2019.

Livestock development in coastal areas

To increase the productivity of livestock in coastal and *char* areas bypassing the negative impacts of climate and utilizing the local genetic and feed resources, the government launched several development projects including the *Integrated Livestock Development Project in Char Land and the South-West region livestock development Project*.

[192] Hayat, A. and Md. S. Islam (2017) Integrated Rice-Fish Farming System in Bangladesh: An Ex-ante Value Chain Evaluation Framework. Integrated Rice-Fish Farming. In: Gatzweiler F., von Braun J. (eds) *Technological and Institutional Innovations for Marginalized Smallholders in Agricultural Development*. Springer, Cham.
[193] USDA (2019) *Gain report- Bangladesh Grain and Feed Annual 2019.* BG 1903. USDA Foreign Agricultural Service.
[194] The Independent (2019) Steps taken to bring poultry farmers under registration. *The Independent*. 26 January.
[195] World Bank (2018)*Livestock and Dairy Development Project*.
[196] GoB (2022) *Annual Report 2020-21*. Dhaka. Department of Livestock Service. Ministry of Fisheries and Livestock

4.3.3 Needs for further actions under this programme

Fisheries sector

Regulate fish-farming

Bangladesh is now the fifth-largest aquaculture producer in the world after the success in the introduction through state-run agricultural extension projects of intensive fish-farming in the early 1980s. This, however, has come at a price, and some blame intensive fish-farming such as the monoculture of tilapia or other carp species for the collapse of freshwater aquatic systems. Uncontrolled and extensive use of non-organic nutrients in agriculture and aquaculture threatens the quality of land and now also the Bay of Bengal, parts of which suffer from eutrophication[197]leaving 'dead zones' that affect marine fisheries too.[198] In addition to monitoring farming practices and the utilisation of land for fish farming, due attention needs to be paid on the assurance of the competitive quality of fish and feed, value addition and traceability of supply chain through updating the acts and rules in existing legislative documents.

Promote intensive aquaculture production

Average pond aquaculture productivity is 5.1 ton/ha in Bangladesh[199], while Vietnam produces 20 ton/ha and 30 ton/ha without and with aeration, respectively.[200] There is, therefore, plenty of room for improving productivity in Bangladesh through mechanisation, for example, the use of RAS (Recirculating Aquaculture System), or biofloc technique of enhancing water quality through balancing carbon and nitrogen in the system. Intensive farming can further be promoted by ensuring low-cost and quality feed through increased domestic production of raw materials and/or bilateral import negotiations.

Finalise the policy framework for cage culture

Cage farming is gaining popularity with *rui, pangas, boal, magur,pholi,* butter catfish and *koi* now being farmed in nearly 10,000 cages in rivers. This is a recent phenomenon and there is much scope for further promoting cage culture in inland open and marine water in order to expand aquaculture production. However, in the absence of a legal framework defining user rights, this will be complicated. Thus, the DoF is drafting a policy to this effect which needs to be finalised.

Bring nutrient-dense and indigenous fish species into commercial culture

Conventional culture fisheries mostly grow the exotic (Indian carps, pangas, tilapia, etc.). and crossbred fishes. The preference for these fish species varies according to consumers, but the demand for nutrient-dense and indigenous species of fishes such as *gulsha, tengra, shing, koi, pabda, taki, shol,* eel,*mola, dhela, batasi, kachki, gutom* is constant and yields a premium price. These species are naturally rich in good quality protein, micronutrients and essential fatty acids, adaptive to local ecological conditions and respond to consumer preference with their traditional taste and flavour. Scaling up the production of these species and bringing them into processed and frozen forms could substantially boost the country's aquaculture production.

Harness the opportunity of the Blue Economy

The verdict of the International Tribunal for the Law of the Sea on the Bangladesh-India-Myanmar maritime dispute in 2015 opened opportunities for the Blue Economy of Bangladesh with new rights of

[197] Excessive richness of nutrients.
[198]Arju, Md. (2019) *Bangladesh's polluting fish farms.* thethirdpole.net.
[199]GoB (2022) *Yearbook of Fisheries Statistical of Bangladesh*. Dhaka. Department of Fisheries. Ministry of Fisheries and Livestock.
[200] Seafood Trade (2014) *Intensive pond farming.*

access on 200 nautical miles of deep-sea in the Bay of Bengal. Unfortunately, existing artisanal fishing is already over-exploited[201] with a presence of 68 thousand boats.[202] Marine fishing in the artisanal area needs to be rationalised and the deep-sea area exploited to its full potential. Along with marine fishing, mariculture of seaweed and other macro-algae, mussels, oysters, marine pearls and sea cucumber are subsectors with potential for both growth and value addition. This can be achieved through due partnerships between the public and private sectors. Extending good practices is needed for the promotion of sustainable use of resources. The Blue Economy is a concept for the sustainable development of the ocean economy which requires a cross-sectoral approach for economic and sustainable development of the coastal region of Bangladesh. As such, the various ocean industries involved (tourism, ship breaking, fishing, marine agriculture, energy production) need to develop a holistic approach and common strategy for coastal and marine development.

Livestock sector

Reduce feed and health management costs in intensive farming

Low profit margins prevail in intensive livestock farming in Bangladesh. This can be attributed mainly to high feed costs (60-70% of total production cost) and herd health management costs.[203] Import dependency for feed ingredients contributes to feed price hikes, and the occurrence of emerging and re-emerging diseases including transboundary diseases gives rise to important treatment costs, especially in high yielding livestock farms because of poor adaptability. Policies to pre-negotiate imports and increase the production of local feed ingredients, to develop local vaccines and medicines, and to boost disease control capacities may contribute to the transformation of existing family farms into commercial farming. In the wake of the COVID-19 pandemic, guaranteeing affordable feed will be paramount especially as many farmers will need to recover from important losses and rebuild their business. Indeed, shortages in imported feed or medical supplies such as vaccines for example or limited services from veterinaries will have set back the industry on a large scale.[204] Collateral free loans with low interest rates may have to be adopted for several years, requiring a 'specially subsidised input support allocation' in annual government budgets.

Enabling the cooperative and farmer centre systems

Bangladesh Milk Producers' Cooperative Union Limited (Milk Vita) has been a successful model of dairy producer's cooperative since 1965. Further expansion of this model throughout the country has the potential to sustain the livelihood of milk producers and to boost the country's dairy production towards self-sufficiency. Alternatively, farmer centre systems could be a viable option for dairy farmers to rent a space for their cows, cold chain storage facilities, access to inputs, veterinary services, machinery, market, price information and other services. To successfully support the establishment of these models it would be essential to ensure reaching out to successful cases applied globally of farmers organisations and farmers' social networks, for instance, WeFarm and Producers Direct.

Support the development of livestock sector value chain

Vertical integration among different stakeholders of the livestock sector (input, production and distribution) could help enhance the production capacity, mitigate risks and enhance the market

[201] Islam, M.M, Shamsuzzaman, M.M., Mozumder, M.M.H., *et al.* (2017) *Exploitation and conservation of coastal and marine fisheries in Bangladesh: Do the fishery laws matter?Marine Policy*. Volume 76.
[202]GoB (2019) *Yearbook of Fisheries Statistical of Bangladesh 2019*. Dhaka. Department of Fisheries. Ministry of Fisheries and Livestock.
[203] UNIDO (2019) *The dairy and beef value chain in Bangladesh*. Draft Report.
[204] FAO (2020) *FAO COVID-19 Rapid Assessment of Food and Nutrition Security in Bangladesh.* Dhaka.

competitiveness of small-scale farms. Integration may enable small-scale farms to use mechanisation, improve livestock breeds and establish climate-resilient livestock housing and management. Also, high yielding feed and fodder production could be promoted along with its processing and storage to support the sustainability of LDDP. Use of fallow lands and promotion of floating aquaponics for fodder production in *haor* and *char* areas and the introduction of fodder as inter-crops may be viable options. In addition, the adoption of livestock insurance may reduce stakeholders' risk with reinforced production capacity.

5.Progress towards Outputs for Outcome II

5.1 Programme II.1. Strengthened post-harvest value chain with a particular focus on MSMEs

Programme II.1 aims to develop and strengthen food value chains thereby supporting improved access to safe and nutritious food and rural income generation. It focuses on post-harvest issues and the role of MSMEs, namely: storage, processing, branding, labelling, marketing and trade. It comprises three sub-programmes: II.1.1. Develop skills and strengthen capacity to process and supply safe and nutrient-rich foods with an emphasis on quality standards and nutrient labelling information; II.1.2. Adopt appropriate technology and strengthen infrastructure to allow quality improvement, value addition and fortification of foods; and II.1.3. Mobilise and promote producer and marketing groups for improved market access and bargaining power, especially for women and smallholders.

5.1.1 Assessment of progress

Table 17 - Progress towards achievement of Programme II.1

CIP2 output proxy indicators	Commodity /Item	2015/16 Baseline	2016/17	2017/18	2018/19	2019/20	2020/21	Source
Quantum index of medium and large-scale manufacturing industry for food[205]		385.1	410.4	501.2	562.7	584.83	447.60	BBS Statistical Yearbook
Difference between farmgate and retail price of selected goods	**Coarse rice**	10%	5.80%	8%	9.17%	46.51%	59%	DAM, MoA
	Lentil	55.2%	70.6%	18%	18.6%	46.01%	57.35%	
	Onion	23.6%	24.1%	22%	30.21%	127.13%	15.03%	
	Brinjal	51.7%	44.6%	48%	35.47%	39.17%	41.12%	
	Potato	29.1%	31.4%	32%	34.09%	47.44%	19.59%	
	Green chili	105%	52%	153%	66%	55.13%	30%	
Food and beverages exported in million BDT		69,020	80,712	93,584	112,119	86099	104156	BBS Statistical Yearbook/ Bangladesh Bank
Coverage of agrobusiness entrepreneurship training by the MoA and the MoI (BSCIC)		7,620	11,271	12,199	10,057	16805 (805-MoI)	11409-DAE 480-BSCIC	MoA, BSCIC

Production of medium and large-scale food manufacturing industries decreased

The quantum index for both private and public medium and large-scale food manufacturing industries summarizes the sectoral production trends. In 2020/21, it reduced by 23% compared to the 2019/20 fiscal year to 447.60 but is still 16.2% higher than the baseline year (Table 17). The index shows that food processing expanded slowly through 2019/20 continuing a strong growth trend that was interrupted in 2020/21. The major food and beverage industries in Bangladesh include Transcom Beverages Ltd., Square Food & Beverage Ltd., Acme Food & Beverage Co., Akij Food and Beverage Ltd., Partex Beverage Ltd., and PRAN Foods Ltd. In 2019/20 FY, the Bangladesh Agro-Processors' Association (BAPA) enlisted 564 food manufacturers mainly involved in exporting dry and processed food, seeds, pickles potato chips and flakes,

[205] The quantum index of medium and large-scale manufacturing industry for food is a proxy variable for the CIP2 indicators:- 'Number of large establishments for manufacturing food' and 'Number of medium, small and micro establishments manufacturing food'. It is calculated based on the total production for manufacturing food from the selected medium and large manufacturing industries from both the private and public sector.

puffed rice, frozen vegetables, spices, juice, candy, and other snacks. This number increased to 594 in the FY 2020/21[206]. (Reference: Mr. Abdul Matin, Assistant Secretary, BAPA).

Farm gate-retail price differences widened, except for green chilli

The difference between farm gate and retail prices is a measure of the value addition which farmers are able to capture from the value chain in relation to the other agents operating along the value chains. From all the monitored food commodities, it increased for coarse rice, lentil and brinjal whereas decreased for onion, potato and green chilli in 2020/21 (Table 17). Year-on-year differences between farm gate-retail prices widened for coarse rice (+12.49 percentage points), lentils (+ 11.34 percentage points), and brinjal (+ 1.95 percentage points) may be due to lockdown situation along with disrupted transportation system for covid pandemic. Onion registered a massive decrease from the previous FY by 96.92 percentage points, which was probably due to the surge in its domestic price transmitted from India (increasing since the end of the 2018/19 financial year). In the 2020/21 FY, this difference minimizes to 114.13 percentage points may be due to the current stable market situation.

Farm gate-retail price difference for lentils also increased compared to the previous year due to high transportation cost. In the case of potato, the differences decreases in 2020/21. There was an increasing trend over the period of 2019/20 from the baseline year that suggests that farmers progressively lower margins compared to other agents, exacerbated by some inefficiencies in the marketing systems, such as growers' illiteracy and lack of information on price, and syndicate system of intermediaries[207]. Besides, shortage of preservation and processing in facilities in local areas induced higher farmgate-retail price gap. However, in 2020/21, the differences decrease significantly to 19.59%, which is 27.85 percentage points lower from the FY 2019/20. Over 11 million tons of potatoes production due to the cultivation in more lands in 2021 might contribute to this[208]. For coarse rice, the increase in wholesale-retail price gap over the period from the baseline year to 2020/21 may be due to production, import decisions and rice procurement volume at the government level and Syndicate of rice market intermediaries 209(Figure-16).

Figure 16 - Retail and wholesale rice price (nominal)

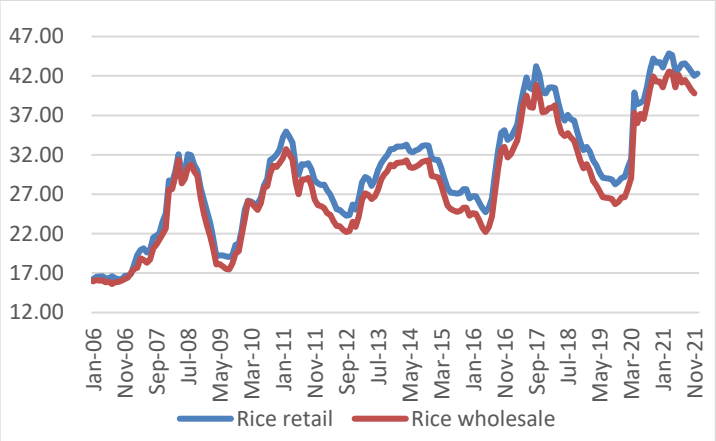


Table 18 presents the price transmission dynamics in the value chains of brinjal, potato and tomato. Among the various agents, farmers obtain the lowest profit while retailers receive the highest. In 2021, Tomato value chain has been producing the largest margins, closely followed by brinjal with potato lagging behind. The production cost of some agricultural commodities is calculated by DAM based on one acre of

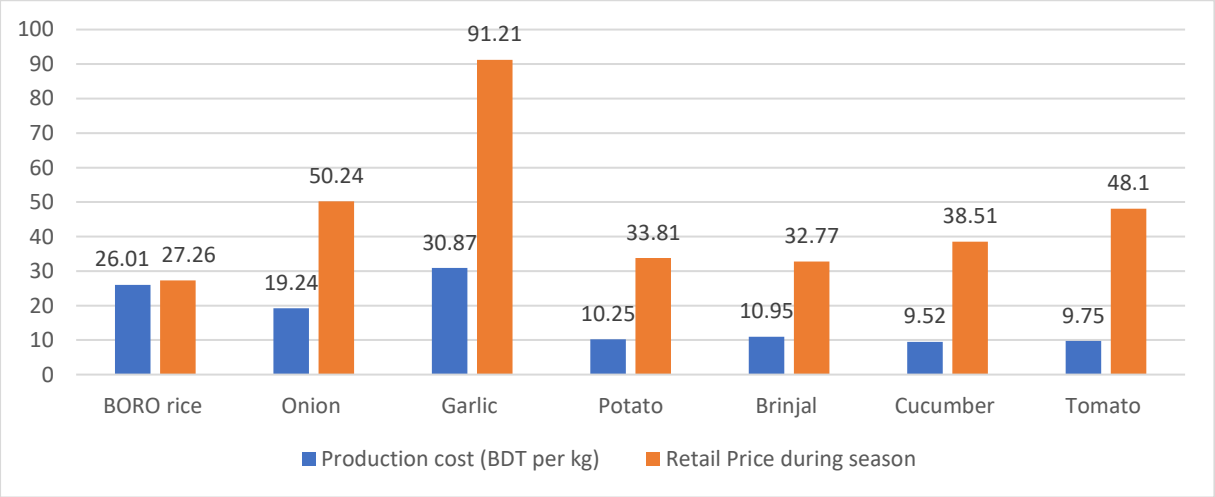
[206] BAPA (2022) List of active members of BAPA.
[207] Singha, U. & Maezawa, S. (2019) *Production, Marketing System, Storage and Future Aspect of Potato in Bangladesh*. *Reviews in Agricultural Science.* Volume 7. pages 29-40.
[208] Potatopro (2021). https://www.potatopro.com/news/2021/bangladesh-cold-storage-association-bcsa-suggests-subsidy-kg-potato-stored
[209] Barc (2020), *Availability and Price Volatility of Rice in Bangladesh*-**An Inter-Institutional Study in 2020, barc.portal.gov.bd**

land of production (Figure 17). While the production cost of garlic is the highest among the selected crops at BDT 30.87 per kg, with its average retail price is 91.21 BDT per kg. The production cost of onion is BDT 19.24 per kg and the seasonal average retail price is BDT 50.24 per kg. The production cost of boro rice is amongst the highest (BDT 26.01 per kg) and its retail price is 27.26 per kg. However, the production cost of cucumber is BDT 9.52 per kg that is the lowest among those analysed but its average retail price is 38.51 per kg.

Table 18. Price transmission (in BDT) in the value chain of brinjal, potato and tomato

Agent	Brinjal			Potato			Tomato		
	Production cost/ Purchase Price	Sale price	Gross profit	Production cost/Purchase Price	Sale price	Gross profit	Production cost/Purchase Price	Sale price	Gross profit
Farmer	10.95	18.90	7.95	10.25	14.55	4.30	9.75	33.66	23.91
Local Trader	18.60	22.79	4.19	14.55	20.20	5.62	23.91	27.16	3.25
Wholesale	22.79	26.45	3.66	20.20	25.60	5.35	27.16	35.36	8.20
Retailer	26.45	32.77	6.32	25.60	33.15	7.90	35.36	48.10	12.74
Consumer	32.77	--		33.15	-	-	48.10	-	-

Figure 17 - Production cost (BDT per kg) and retail price of selected crops



Source: Data from DAM Annual Report 2020-21 and DAM website

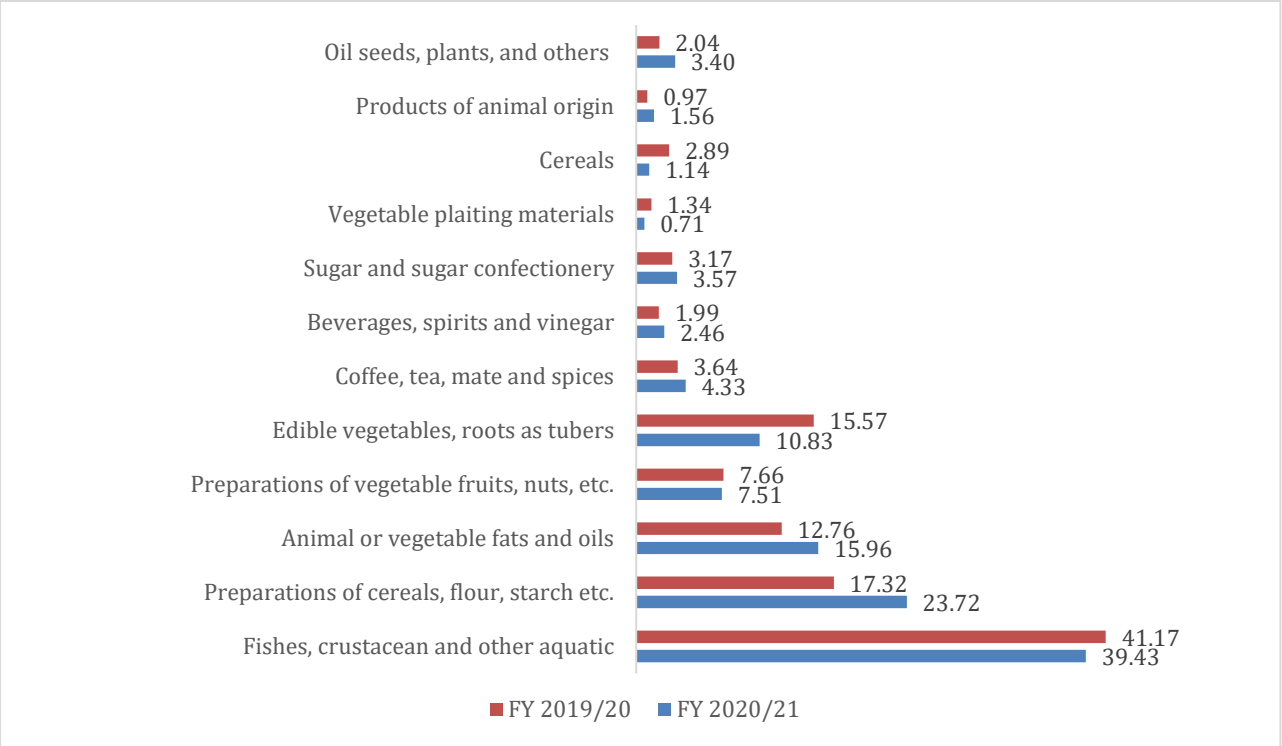
Increased and more diversified food and beverage exports

Food and beverage exports decreased by 14% from the previous year where the total export decrease was 16.93%. This was due to covid-19 pandemic. The decreased amount was BDT 16629.50 million. Fish, crustacean and other aquatic products continued to be the largest food group at 39.43% of total food and beverage exports down from 41.17% of the previous year (Figure 18). This was partially due to the waning international prices of shrimp and the weak competitive pricing of black shrimp – which registered a -7.89% in export earnings to USD 332.65 million in 2018/19, against the Vietnam shrimp[210].

[210] Rahman, S. (2019) *Drastic fall in shrimp export earnings*. *The Financial Times.* 31 August.

In 2019/20 , preparations of cereals, flour, and starch products represented the second largest exported food group (17.32%), followed by edible vegetables, roots, and tubers (BDT 13401.35 million, 15.57 %), which obese their share (from 7.5%) while increased in absolute value (up from BDT 8,375 million). The decline in the shares of the previous food groups was offset by an increased share of cereals (2.9%), animal and vegetable fat (12.76%), and sugar (3.17%) (Figure 18). The GoB plans to increase agro-processing exports to BDT 170 billion (5% of the total export value) by 2021 by creating a conducive environment of agro-processing exporters[211]. However, reaching this target may be hampered as a result of the COVID-19 pandemic.

Figure 18 – Components of food and beverage exports in % of total value



Source: Data from BBS Foreign Trade Statistics.

Agro-business entrepreneurship training and capacity building programmes continued

The Ministry of Agriculture and the Bangladesh Small and Cottage Industries Corporation (BSCIC) of the Ministry of Industries (MoI) imparted entrepreneurship training and capacity building to 11889 farmers and entrepreneurs in 2020/21. This number is 2.21 and 1.6 times higher compares with 7,620 farmers and entrepreneurs in the baseline but 4916 farmers and entrepreneurs less than the previous year.

Establishing a favourable policy and technical support to food processing

The MoI has been drafting an agro-food processing promotion policy 2021. SME Policy 2019 has also been developed by this Ministry. The 20% cash incentives and tax exemption for the export of selected fresh and processed food items continued. The National Agriculture Policy 2018 (NAP 2018)[212] was developed aiming to make agriculture safe and profitable, achieving sustainable FNS with among others, emphasis on reducing postharvest loss, enhancing agro-processing activities and extending postharvest technology

[211] Dhaka Tribune (2019) *Export earnings from processed food to exceed $1b by 2021*. *Dhaka Tribune.* 19 November.

[212] GoB (2018) *National Agriculture Policy (NAP) 2018*. Dhaka. Ministry of Agriculture.

to end-users. The National Agriculture Extension Policy 2020 also includes boosting production and export of high value cash crop. The Export Policy 2018-21[213] provides a clear rationale for the adoption of good practices to produce and export safe food. The Hortex Foundation of MoA and Bangladesh Fruits, Vegetables and Allied Products Exporting Association (BFVAPEA) provide primary producers and exporters with support for compliance with regulatory standards of the importing countries. Hortex Foundation also partnered with BAPA and provided technical supports to the association working for fostering food processing industry in the country. The BFVAPEA facilitates the production of high quality and safe fruits and vegetables through contract growers for export purposes.

Modernised quality and safety standards and monitoring and surveillance by the regulatory authority

BFSA produced some important regulations i.e. Food Safety (Food Hygiene) Regulations 2018[214], Food Safety (Food Contact Materials) Regulations 2019, Food Trader's Obligations Regulations-2020, Safe Food (Protection of Healthy Environment) Regulations 2018, under the Food Safety Act 2013[215]. Moreover, BFSA has drafted some other rules as (i) Safe Food (Withdrawal) Regulations, 2020, (ii) Safe Food (Control of Microbial Contaminants) Regulations 2021, (iii) Safe Food (Restaurant) Regulations 2021, (iv) Control of Trans Fatty Acids in Foodstuffs Regulations, 2021 and (v) Safe Food (Advertising) Regulations, 2021[216]. BFSA also increased its analytical capacity by installing a modern Mobile Food Testing Laboratory. Besides, BFSA has installed "Najor" app to implement the monitoring activities of food processing areas of hotels and restaurants through online app and until 2021, it is conducting monitoring on six restaurants in Dhaka city. The Bangladesh Standards and Testing Institution (BSTI) has increased monitoring and surveillance in storage, processing industries and the market for quality control of mandatory processed food products (cereal products, oilseed products, dairy products, fruits and vegetable products, spices and condiments, etc.). BSTI also revised Bangladesh Standards (BDS) on pasteurized milk, poultry feed, chip-crackers, lachcha-semai with up-to-date scientific information. In 2020/21, BSTI has tested 28016 number of Food Commodities, Organic Commodities and Inorganic Commodities (Annual Report of BSTI 2020/21).

Private sector initiatives on safe production and postharvest practices

Within the agro-industry, Bio-Tech Mushroom, a button mushroom production company, is yielding safe and export quality White/Brown Button mushrooms by using the finest raw materials from Europe through the organic way of production technology. It is registered under Bangladesh Investment Development Authority (BIDA), Prime Minister's Office, People's Republic of Bangladesh. Throughout the entire production and supply chain - from importing premium quality spawn and compost to growing, picking, packaging and delivering to consumers' door-steps - strict quality assurance and quality control policies adhere to GAP and comply to HACCP (Hazard Analysis and Critical Control Points), ISO 22000:2005 and BRC (British Retail Consortium).[217] The establishment of a Village Super Market[218] in Khulna, supported by the INGO Solidaridad, is another example of adopting improved postharvest technology in the handling and distribution of perishables.

[213] GoB (2018) *Export Policy 2018-2021*. Dhaka. Ministry of Commerce.
[214] Bangladesh Food Safety Authority (2018) *Food Safety (Food Hygiene) Regulation 2018*. In Bangla.
[215] Bangladesh Food Safety Authority (2019) *Food Safety (Food Contact Materials) Regulation 2018*. In Bangla.
[216] http://www.bfsa.gov.bd/ (Annual Report 2020-21 of Bangladesh Food Safety Authority).
[217] Bio-tech Mushroom.
[218] Village Super Market, Khulna.

Promoting nutrition-dense and export-oriented value chains

The MoA has been implementing the Smallholder Agricultural Competitiveness Programme (SACP-2018-2024)[219] and working with 225,000 farmers who engaged in production, primary processing and value addition of high-value crops. It targets the cultivation of high-value crops such as cereal, fruit and vegetable, pulse and oil crops for farmers to increase their revenues and profits. Scaling up underutilized local fruits and vegetables is especially relevant in this regard, with a need for promoting their greater use in local food systems and not only targeting high-value export chains but leveraging the nutritional benefits for local consumers. Proper post-harvest management is critical as it enhances the quality, nutritional and economic value of crops while reducing different types of loss. This includes innovations made in the packaging sector. For example, newly designed packaging materials for sugars and sugar-cubes have been developed at the Carew & Co., the State-owned only distillery in Bangladesh located inside the Darsana Sugar Mill compound and under the authority of Bangladesh Sugar and Food Industries Corporation. Bangladesh Good Agriculture Practice Policy 2020 has been formulated and the National Agricultural Marketing policy is under preparation.

5.1.2 Needs for further actions under this programme

Prepare a post-harvest loss reduction strategy

Major constraints in establishing efficient NSVC include inefficient handling and transportation; poor technologies for storage, processing and packaging; involvement of too many diverse actors[220]; and poor infrastructures. In light of the huge FLW and the challenges faced under trade liberalization and globalisation, serious efforts are needed to reduce food losses and waste. To that end, the NSVC establishment ultimately aims at reducing post-harvest loss and assuring food quality and safety for the ultimate users. Considering the global initiatives to reduce FLW and to achieve SDG 12.3.1, preparation of a post-harvest loss reduction strategy and action plan is urgently needed. Similar national FLW reduction strategy have been developed by Canada[221] and the European Union[222]. A research project titled 'Estimation of overall food losses and waste at all levels of the food chain' under the MUCH is near about completion. From this research valuable findings and recommendations will come out which will be very important to reduce FWL.

Strengthen product certification to ensure quality and safety

Although the export-oriented large-scale food processing industries have quality and safety certification (GMP, GHP, HACCP, ISO 22000:2005, etc.), certified farms for the primary producer (e.g. GAP and ASEAN Good Aquaculture Practices (ASEAN GAqP) are almost absent in Bangladesh. So, steps to be taken to bring the primary producers and MSMEs under various certification schemes to assure product quality and safety for the domestic and export markets. The Bangladesh Agricultural Certification Body (BACB) has been established to provide Bangladesh GAP Certificate but yet to start functionality.

Enhance institutional and individual capacity to support post-harvest systems

Improved post-harvest handling and strengthened value addition activities are the needs of the time. Individual capacity development of food chain actors in the food chain needs to be ensured through vocational education, training and exposure visit. On the other hand, institutional capacity strengthening

[219] IFAD (2018) *Smallholder Agricultural Competitiveness Programme- Final Project Design Report*. Asia and the Pacific Division, Programme Management Department and DAM annual Report 2020/21.
[220] Hassan, M.K. (2012) *Final Report- Improving the Performance of Marketing System of Fruits and Vegetables in Bangladesh*. NFPCSP Research Grants Initiative. Dhaka. FAO.
[221] National Zero Waste Council (2018) *A Food Loss and Waste Strategy for Canada*. Vancouver. Canada.
[222] European Union (2019) *National Strategy for Food Waste Reduction*. Federal Ministry of Food and Agriculture.

is required through establishing modern post-harvest research centres or laboratories, research development support, integrating nutrition-sensitive postharvest processing modules in the existing curricula and scaling up extension facilities and services for effective transfer of technologies. Both individual and institutional capacity development need to be monitored using built-in monitoring and evaluation tools and mechanisms.

Strengthen partnership and collaboration to set up post-harvest facilities

Private sector has important role to reduce post-harvest loss and wastage. Public-private partnership is crucial to introduce new and modern postharvest technologies like refrigerated transport vehicles, low temperature storage, modern slaughterhouse, improved packaging, ethylene-induced ripening chamber, etc. For example, in the case of multi-chambered low temperature storage facilities for fruits and vegetables (except potato), few cold stores may be established by the public sector in order to encourage the private sectors to do more. This is the case of the public-owned (MoA) Central Packing House established in Shampur (Dhaka) to facilitate the export of fresh high quality and safe fruits and vegetables. This facility is equipped with cooling, sorting, grading, inspection and packaging facilities. The modern food storage facilities project will establish 8 still silo for rice and wheat where grain will be storage maintaining with proper measures to keep its quality and safety. Similar facilities (especially storage facilities) may be established in major fruits and vegetables growing regions and assembly and whole markets, to reduce the large amounts of loss and waste.

Successfully tackling FLW throughout a supply chain necessitates coordinated action and true collaboration- within the country, and globally. Initiatives are currently taking place in Bangladesh, but with limited coordination. The emerging focus on food system sustainability, climate protection, agricultural mechanisation and food safety requires strong effective national and international collaborations among various organisations and entities involved.

Increase the competitive environment for agro-processing to boost exports

Bangladesh's agro-processing sector is a 3.2 billion USD industry as per annual turnover. Export earnings of agro-processing companies are growing: BAPA reported a record 700 million USD total export earnings in 2018/19, up 10.24% over the previous year[223]. Exports of processed food items declined substantially so far this fiscal year (FY) due to higher operating costs and raw material prices than the competitors.

The total export earnings of the country increased 14.12 percent to US$ 45,367 million in the fiscal year 2020-21 as compared to previous FY 2019-20, according to the Export Promotion Bureau (EPB). Besides, the share of agri products export earning is 2.65% of the total earnings during the FY 2020-21.

Creating an enabling environment with, for example, the provision of incentives, especially by way of soft credit, or continued tax exemption and cash incentives can boost this sector. Credit collaterals need to be easier for new or small entrepreneurs; such as equipment-based credit instead of asset-based collateral. Export opportunities in global markets can only be exploited through long-term planning with an emphasis on market research, product adaptation and assurance of rigorous compliance requirements. Market research provides information on product needs and changes in consumers' tastes and preferences, and on compliance requirements of importing countries. In addition to processed food, fresh horticultural produce, especially fruits and vegetables, are exported particularly to countries with a large Bengali diaspora. Exports activities need to be automated so that all activities can be done in one stop platform. To access mainstream export markets exporters must comply with the rigorous compliance requirements of importing countries. Primary producers and MSMEs require technical and financial support to adopt

[223] Ahmed, W. (2020) *Processed food export*. *The Financial Express*. 10 March.

improved practices throughout the supply chain (GAP, GMP, GHP, HACCP, etc.) to assure product quality and safety for domestic and export purposes. ISO 22000, for instance, facilitates border crossing of products so as to bring people food that they can trust.

Explore block chain as a mean to ensuring traceability of nutrient-rich foods

Establishing block chain is a future need for NSVC management. Block chain is a decentralised, distributed and public digital ledger that is used to record transactions across many computers so that the record cannot be altered without the agreement and active involvement of everyone in the network. Transactions can be viewed simultaneously and in real-time, with both greater security and transparency. However, there are many barriers and challenges that hinder its wider popularity among producers and systems. The challenges involve technical aspects, education, policies and regulatory frameworks. High-speed internet service and devices are crucial for chain management through efficiently linking the postharvest operations and the value chain actors.

Food value chain covers activities and participants involved in moving food products from the growers to the consumers. Participants in this chain need financing to carry out their activities. MSMEs generally turn to traditional financing institutions, rural producers, processors and retailers, whereas large companies receive resources from banks. In India, some commercial banks have invested in acquiring knowledge about domestic agricultural markets to identify unmet financial needs that they can serve. The strategy used to cater to this clientele segment leverages on digital technology to ensure these services are more convenient to clients, in addition to having low operation costs. Digital technology can also be tailored to fit unique transactions that take place in agricultural value chain segments. In addition, it allows the recording of a transaction history, which can then be used for the development of additional rural financial services.[224]

Innovate in packaging and storage

Improved packaging is a must for prolonged shelf life, retained quality and safety of food. There is a strong correlation between foods with the highest percentage of wastage and the least amount of packaging[225]. There is a lack of improved packaging, especially for perishables in Bangladesh although large-scale food processors are increasingly engaged in packaging innovation, ranging from the materials used to technologies that can help reduce contamination of packaged foods on the assembly line. But more research is needed to understand what the most effective packaging approaches and technologies might be, such as passive technologies, or active and intelligent packaging through chemical or biological agents to prevent food spoilage. Any new food packaging introduced must be of food-grade and approved by food safety standards and regulations[226]. Proper labelling also needs to be assured. Food items have an array of date labels that cause consumers to be wary of buying or consuming food such as: 'best before', 'use by', 'sell by' and 'expiry'. However, labelling needs to abide by the recently promulgated Packaged Food Labelling Regulations 2017 of BFSA[227].

[224] FAO (2017) *Innovative risk management strategies in rural and agriculture finance – The Asian experience*. *B*y Emilio Hernández (ed.). Rome.
[225] Ameripen (2018) *Quantifying the Value of Packaging - As a strategy to prevent food waste in America;* McEwen Associates (2013) *The Value of Flexible Packaging in Extending Shelf Life and Reducing Food Waste*. Prepared by for the Flexible Packaging Association.
[226] BFSA (2019) *BFSA Food Contact Materials Regulations 2019*.
[227] BFSA (2017) *BFSA Labelling Regulations of Packaged Food 2017*.

5.2 Programme II.2. Improved physical access to markets, facilities and information

Programme 2.2 focuses on improving the physical access to market, facilities and information, which consists of three sub-programmes: (II.2.1.) Improve market infrastructures, physical access to market facilities, (II.2.2.) Strengthen private sector participation and private-public partnerships, and (II.2.3.) Scale-up information dissemination including the establishment ICT (Information and Communication Technology) facilities.

5.2.1 Assessment of progress

Table 19 - Progress towards achievement of Programme II.2

CIP2 output proxy indicators	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
Upazilla and union road network in good and fair condition	33% (2014)	47%	49.44%	38%	67%	LGED
Number of growth centres, rural markets, women market centres, and Union Parishad Complexes developed by LGED and DAM	356	367	386	335 LGED 93 DAM 428	205-LGED 96-DAM	LGED, DAM
Capacity of cold storage available (in thousand MT)	4,000 (DAE)	6,905 (DAE)	7,015 (DAE)	7,015 (DAE)	7050 (DAE)	DAE. BBS Statistical Yearbook
Number of Digital Centres across the country at national and sub-national levels	5,286 (2016)	5,312 (2018)	5,865 (2019)	5882 (2020)	8363 (2021)	Ministry of ICTs
Number of food, market and infrastructure PPP contracts awarded (2015) by the PPP authority	2 (2015)	0	0	0	0	Annual Report 2015/16, Public Private Partnership Authority, Prime Minister's Office

The improvement of rural roads continued but is still off target

Rural connectivity plays a fundamental role in generating both on and off-farm rural income, providing employment opportunities and in ensuring physical access to food thereby supporting improving nutritional outcomes. Upazila and union road networks in good and fair condition improved to 67%, up from last fiscal year as well as the reference period (Table 19). As of 2020/21, LGED has upgraded 34,022 km of upazila roads, which is 92.26% out of total 36,876 km of upazila roads and 31,060 km of total 41,781 km of union roads as paved roads across the country through various development projects. This increasing trend shows that rural connectivity has improved which has accelerated transport connectivity in rural areas and facilitated the movement of people and goods in those areas [228](LGED Annual Report 2021). Besides, to strengthen rural connectivity between rural communities, productive agricultural areas and socioeconomic centres, LGED and ADB kick-started the 449 million USD Rural Connectivity Improvement Project July 2018- June 2024. The project's interventions aim at upgrading 2630 km of rural

[228] LGED Annual Report 2021. https://www.lged.gov.bd/

roads to all-weather standards in 34 districts located in five divisions; improving the capacity of infrastructure agencies; and financing the enhancements to the national rural road master plan[229].

More growth centres and rural markets developed over the previous year

The number of growth centres, rural markets, women market centres and Union Parishad complexes increased over the previous year by 42 units to a total of 428. While having new establishments is certainly important, quality maintenance of the existing centres play an essential role in ensuring the quality of perishable food products.

Cold storage capacity increased from previous year

Cold storage capacity expanded over the reference period from 4,000 MMT at baseline to 7050 MMT in 2020/21. Bangladesh Cold Storage Association (BCSA) which is a platform of some 400 cold storage owners reported that during the 2018 harvesting season, farmers and cold storage owners together incurred a loss of BDT 125.15 billion due to low prices and unsold produce at the warehouses, and this could have been prevented by having more cold storage[230]. Therefore, through DAM, has taken a project to establish 500 zero-energy cool chambers (ZECC) on the household premises of 500 selected farmers in 31 districts over the next five years. Three thousand vegetable growers, 875 officers and 750 employees of DAM will also be trained in the usage of ZECC storages[231].

The number of Digital Centres increased

Digital centres in rural areas play an essential role in ensuring the delivery of a variety of public services to the underserved rural households thereby realising digital inclusion by helping more than six million previously under-served citizens[232]. The number of digital centres increased, from 5,286 in the baseline to 8363 in 2021. Besides, 1659 number of Eksheba Digital Centre and 61 numbers of Franchise digital service has been established across the country.

Expansion of storage, transport and laboratory infrastructure

Establishment of an efficient cold chain is essential to ensure NSVC both in the public and private sector. In addition to public sector storage facilities for foodgrain, there are more than 400 private cold storage units for potato in Bangladesh[233]. But there is a dearth of low-temperature storage facilities as well as cool transportation facilities for other perishables, especially milk, fish, fruits and vegetables. Adequate refrigerated transportation facilities need to be established throughout the country through public-private initiatives in order to reduce loss and waste and maintain the quality and safety of food. The ADB-supported Rural Connectivity Improvement Project (RCIP, 2019-2023) aims to: upgrade about 1,700 kilometres of rural roads to all-weather standards under 34 districts; to improve the managerial and technical capacity of LGED's officials, the road users' awareness on road safety in project areas, and the skills of women workers in road construction; and to enhance the rural road master plan, by using GIS (Geographic Information System) to identify agricultural value chains, road conditions, and mechanisms for allocating priorities, and resource optimisation[234]. Although export-oriented large-scale food processing industries receive quality and safety certification (GMP, GHP, HACCP, ISO 22000:2005, etc.)

53 *Bangladesh: Rural Connectivity Improvement Project - Project Administration Manual*
230 The Financial Express (2018) *Cold storage owners in need of govt support*. 1 April.
231 Dhaka Tribune (2019). *500 cool chambers for vegetables at growers' doorsteps planned.* August.
232 See the a2i One-Stop Shop website.
233 The Financial Express (8 April, 2021). Addressing potato growers storage problem.
234 ADB (2018) *Bangladesh: Rural Connectivity Improvement Project -. Project Administration Manual.* Project Administration Manual. September.

from a number of certified farms for primary producers (e.g. GAP, GAqP, etc.), the extensive certification is scant in Bangladesh. BSFA has listed 50 food-testing laboratories across the country but only 10 laboratories are designated (BFSA Annual Report, 2020/21). BSFA has an initiative for establishing a central food-testing laboratory and divisional laboratories as well. The MSMEs and the primary producers are in dire need of quality certification, and the Bangladesh Agricultural Certification Body (BACB), which was recently established, is yet to start delivering Bangladesh GAP Certificates.

Innovations to share information and enhance market opportunities

Several initiatives have been undertaken to improve networking and knowledge exchange between different actors in the value chain. They are paving the way for improved market services for farmers and consumers. Modern technologies such as IoT, machine learning and artificial intelligence contribute to modernising agriculture. The GoB is also working to mainstream ICTs throughout the agricultural value chain. In February 2017, the Bangabandhu Sheikh Mujibur Rahman Agricultural University, Huawei Technologies and Awami League's research wing Centre for Research and Information signed an MoU to initiate the E-Village Project[235]. They will deploy and test sensor-based real-time data collection and information sharing for the farmers. Another example is Krishi Kontho, an agricultural information service which utilises pre-recorded voice messages and SMSes pushed to farmers[236]. The agricultural information service Krishi Kontho was developed by the international NGO Christian Aid in collaboration with the technical partner mPower, the local NGO Gana Unnayan Kendra (GUK), and local farmers subjected to field trials.

Traditionally, small-scale farmers have been unable to access financial services. The online fintech platform iFarmer connects farmers to retail investors. It enables access to funding without using farm assets as collateral. Banks can massively contribute to developing the rural agriculture and agro-processing sectors. There have been continued efforts to make up for the lack of rural banking infrastructure and the agro-processing sector was declared a priority sector by the government. The Rajshahi Krishi Unnayan Bank (RAKUB) has also introduced a special credit programme promoting small agro-enterprises (see Outcome I)[237].

Establishing markets for safe and fresh foods

Food safety, quality and nutritional aspects are critical concerns for agri-businesses in Bangladesh. The consumers have limited trust in agri-products. Because from raw vegetable and fruits to milk and milk products, fish, meat and processed food–every food item is contaminated. Contamination of foods with toxic chemicals like carbide, formalin, heavy metal, chemical, textile colors, artificial sweeteners, ripeness, flavors, DDT, urea and so on pose a serious threat to public health.

To foster a market for safe food, Shwapno, the chain store with support from the Agriculture Value Chain (AVC) Project launched a new brand initiative 'Shuddho'[238] whereby markets are supplied with agricultural foods of high standards and safety. AVC along with GLOBALG.A.P. and the Dhaka Chamber of Commerce and Industry has significantly improved the supply chain and trained the farmers and services providers about Good Manufacturing Practices (GMP). Bangladesh Society for Safe Food has been established with

[235] CRI (2019) *E-village- digitally empowering village*.
[236] Christensen, L.R., Ahsan, H. & Akand, E. (2018). Krishi Kontho: An Agricultural Information Service in Bangladesh. *NordiCHI '18: Proceedings of the 10th Nordic Conference on Human-Computer Interaction*. September. Oslo.
[237] Innovision and Katalyst (2016) *Study on the Roles and Opportunities for Private Sector in Agro-food Processing Industry of Bangladesh*.
[238] USAID (2019) *Bangladesh USAID Agriculture Value Chain Project.* United States Agency for International Development. US Government.

a slogan “Safe Food for Healthy Nation”. This organization has been working to develop awareness about adulteration and contamination. This has generated consumer interest and a market for certified safe food in Bangladesh.

5.2.2 Needs for further actions under this programme

Incentivise private sector for high-value crop processing

An agri-processing zone can significantly improve the food sector and boost the economy. Studies suggest setting up agro-processing zones in the Northern region of Bangladesh since most of the agriculture crops are produced there. Such endeavour can significantly reduce transport costs. To facilitate private sector investment, the government may provide incentives such as easy land leasing system, one-stop service for all utility connections, guarantee for loans and tax concessions. The private sector can build the infrastructure in exchange for land and basic utilities. Besides, credit facilities for new and small entrepreneurs can enhance expanding local level processing centres. Technology development for small processing industries is essential. This may strengthen private public partnerships[239].

Establishment of e-markets and secure payment systems

Developing a virtual platform to create a unified national market for agricultural commodities can help improve competitiveness and transparency in the market. There are a number of benefits of this market as (i) Instant Payment (ii) Higher payment security (iii) Better customer convenience (iv) Saves processing costs (v) Low risk of threat (vi) transparent (vii) Contactless etc. The platform could inform the users about the stock arrivals, prices, buying and selling offers. Such online trading platform can reduce transactional costs, bridge the information gap, cut the middlemen and expand market access for farmers around the country. It also provides a secure e-payment modality to transfer money directly to farmers’ bank accounts. The cash transactions have started decreasing after the integration of an electronic payment system in the markets. This means the small businesses need to start using the latest technology to prevent the risk of being overtaken by the competitors.

Facilitate private sector to establish safe food through IoT technologies

IoT can change the demographics of the Bangladesh agricultural sector. Modern technology can be used to inform the decision making at farm and business levels. Technology like block chain can be used to create a digital identity of the farmers along with automated payments, agricultural insurance; traceability etc[240]. Bangladesh’s agricultural sector is the sector where most of its population is making their living. Bangladesh is placed as 2nd in freshwater fish production in 2020. The use of IoT can increase the efficiency of fish production and can take us to a place where nobody can beat us in a shorter while. Different IoT based water monitoring and environment controlling solution can increase fish production to a significant amount. Again high precision farming or precision agriculture can increase our crop productivity and increase our GDP by a substantial value. The lack of internet connectivity, awareness and human resources are the main inhibitors in countrywide implementation of sustainable and smart agricultural practices. The country needs to develop adequate infrastructure to enable the implementation of such initiatives. Private sector expertise can be used to fill the gaps and adequate policy attention should be given to allow this to happen. Big data analytics for climate-smart agricultural practices in South Asia (Big Data^2 CSA) - in partnership with the public and private sector in Bangladesh

[239] Innovision and Katalyst (2016) *Study on the Roles and Opportunities for Private Sector in Agro-food Processing Industry of Bangladesh*.
[240] FAO and ITU (2019) *E-Agriculture in Action: Blockchain for agriculture Opportunities and Challenges*. Bangkok.

and supported by CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) - is developing digital data collection systems serving as crowdsource, data-mine and interpreting environmental, climatic and remotely sensed data, primary agronomic management, and the socio-economic data from thousands of smallholder farmers producing rice and wheat[241]. This would allow to identify key patterns in yield, profitability, greenhouse gas emissions intensity and resilience.

Dynamic and machine learning-based early warning system

With the looming climate adversities and changes in soil conditions, traditional farming methods are becoming inadequate if agriculture is to be sustained. With the help from drones, sensors and IoT devices, farmers could make better informed decisions. GIS is a low-cost tool that can help monitor crop coverage, identify fishing sites and detect soil health. It can also help collect, store and maintain climate data. IoT devices can offer 'just in time' services which could help dairy and fish farms through health care monitoring, for instance through wearable collars, artificial insemination, through accurate estrus detection, and automated fish feeding, thus reducing cost for the farmers and increasing farm productivity[242].

Shorter value chain for the perishable products

Cold storage is the best way to preserve the integrity of perishable products. A cold chain from the farm to the processing units or markets can help minimise fresh produce postharvest losses. Existing cold storage facilities in Bangladesh cannot meet the country's requirements. To address this issue, shorter value chain should be encouraged. Building low-cost cold storage facilities (e.g. CoolBot) across the country could dramatically reduce food loss. It would also provide farmers the confidence they need to start growing high-value crops. Private companies may also be encouraged to establish local standard cold storage and vegetable packaging industries to foster local-level processing industries.

[241] CIMMYT (2019) *Big data analytics for climate-smart agricultural practices in South Asia (Big Data2 CSA)*.
[242] FAO (2013) *ICT uses for inclusive agricultural value chains*. Rome.

6 Progress towards Outputs for Outcome III

6.1 Programme III.1 Enhanced nutrition knowledge, promotion of good practices, and consumption of safe and nutritious diets

Programme III.1 aims to improve nutrition knowledge, promote good food safety practices and consumption of safe and nutritious diets. While the emphasis is given to dietary diversity and proportionate consumption of cereal and non-cereal foods towards meeting dietary requirements of macro and micronutrient deficiencies, child stunting, wasting and the emerging concerns of non-communicable diseases (NCDs) merit attention. Promotion of a healthy diet, lifestyle and increased physical activity are key strategies to prevent NCDs. Accordingly, three sub-programmes are included in this programme. (III.1.1) is about scaling up nutrition training and behaviour change communication (BCC); (III.1.2) promotes dietary guidelines linked with NCD strategies and related nutrition services; and (III.1.3) advocates for research, development and promotion of knowledge-based tools on nutrient-dense recipes with local foods using Food Composition Tables (FCTs) for Bangladesh.

6.1.1. Progress towards achievements

Table 20 - Progress towards achievement of Programme III.1

CIP2 output proxy indicators	2015/16 Baseline	2018/19	2019/20	2020/21	Source
Proportion of children under 6 months who are exclusively breastfed (%)	55.3% (2014)	65%	62.6%	-	BDHS MICS
Share of total dietary energy supply for consumption from cereal	75.8%	75.0%	75.0%	-	FAOSTAT
Share of total dietary energy supply for consumption from non-cereal	24.2%	25.0%	25.0%	-	FAOSTAT
Direct gender budgeting as % of MoFood revised budget	4.3%	2.41%	6.66%	13.77%	MoF (Budget Wing)
Prevalence of diabetic[243]	8.3 R	9.2	9.2	12.5	IDF Atlas
Number of mass media activities for nutritional behaviour[244]	1,000	2,606	2,606	2,606	MoHFW for 2015/16 and MoInfo and FAO for 2018/19
Number of institutions promoting dietary guidelines	3	18	18	18	FPMU

*R: Revised; *: Not available*

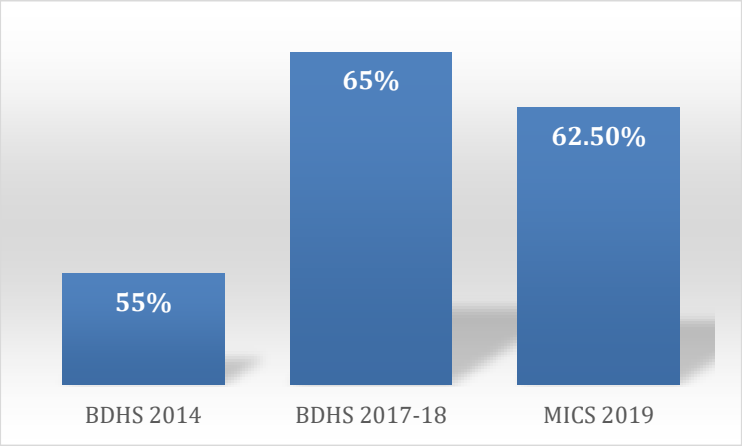
[243] Given the lack of recent available data from the source used in previous MRs, namely the MoHFW Health Bulletin, an alternative source has been sought, IDF, hence the revised numbers.

[244] The MoHFW Health Bulletin provided the numbers for the first two years of the CIP2. For 2018/19, detailed information was provided by the Ministry of Information and FAO.

Slightly declining rate of Exclusive breastfeeding progressed considering MICS 2021

Exclusive breastfeeding (EBF) has the single largest impact on reducing child mortality than any other preventive measures.[245] BDHS showed a remarkable increase in EBF rate from 55.3% in 2014 to 65% in 2017 (Table 20). However, the rate of EBF has declined to 62.6% in 2019 as per the MICS-2021. With the extended efforts on this area, Bangladesh can be expected to reach the NPAN2 target for EBF, which is 70% by 2025. Inappropriate breastfeeding increases the risk of developing malnutrition at an early stage of life.

Figure 19 - Trend in exclusive breastfeeding (%) among infants



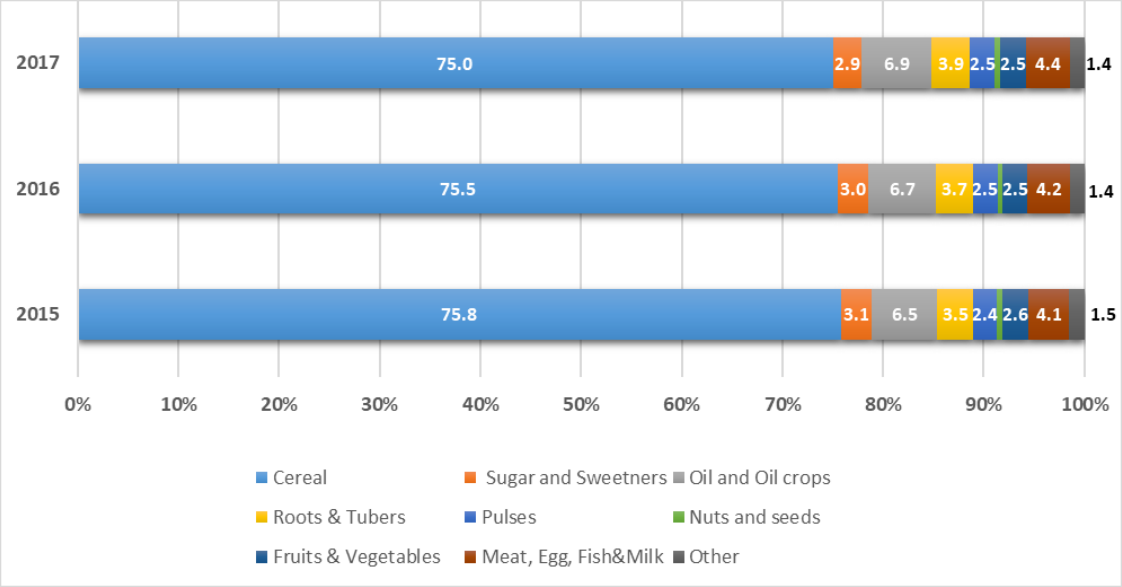
Source: Data from BDHS 2014 and 2017, MICS 2021

Share of total dietary energy supply (DES) from cereals remained almost unchanged until 2017 after which there are no data

Between 2015/16 and 2017/18, the ratio of cereal and non-cereal food consumption per capita per day remained almost unchanged, from 76:24 to 75:25. WHO/FAO normative recommendations are that 55-75% of the proportion of total energy consumption should come from carbohydrate, 10-15% from protein and 15-30% from fat. In 2017, consumption of cereals provided 75% of the average dietary energy, the maximum of the recommended range for carbohydrates (Figure 20). The aggregate supply of dietary energy from protein-rich animal source foods and vegetable protein (i.e. pulses) was close to 7% which is significantly lower than the normative recommendation. The DES from oil and oil crops was approximately 7%, also significantly lower than the recommended intake. The DES is clearly predominantly cereal-based, reflecting a lack of dietary diversity in Bangladesh.

[245] EBF is an integral part for optimal breastfeeding includes early initiation within one hour of life and continued breastfeeding for up to two years of age and beyond. EBF is crucial for child survival and health as breastmilk provides all the essential energy and nutrients for an infant's optimal growth and development in early stages, especially in the critical window from birth to two years of age. Notably, EBF reduces the risk of the infant to experience diarrhoeal diseases, upper respiratory tract infections, obesity in later life, and EBF could improve the neurocognitive functions of the child.

Figure 20 - Share of food groups as percentage of Daily Energy Supply (DES)



Source: Data from FAOSTAT

Direct gender budgeting within the Ministry of Food have improved

Gender-responsive budgeting is essential to ensure gender-equitable distribution of resources. The government tracks expenses of different ministries to prioritise gender issues in their policy and programmatic work, in line with the National Women Development Policy 2011. Women's empowerment and equity have been well reflected in gender-responsive budgeting. The direct budget allocated to gender issues within the Ministry of Food substantially increased from 4.3% in 2015/16 and 5.9% the following year, to 31.8% in 2017/18. In 2018/19, it dropped back to 2.41%. However, it has increased to 13.77% in 2021-20. It is important to improve gender-responsive budget.

Prevalence of diabetes increased

Diabetes mellitus is one of the major NCDs that leads to morbidity and mortality. As reported by the International Diabetes Federation (IDF), more than two-thirds of people with diabetes die due to cardiovascular complications. Bangladesh is one of the countries with the highest burden of diabetes globally. In the last decade, the prevalence of diabetes mellitus has shown an increasing trend, rising from 6.6 percent in 2010 to 9.2 percent in 2019. IDF-2021 report shows that the prevalence of diabetes has increased to 12.5 percent in adults (20-79 years aged) in 2021. If the prevalence of diabetic cases continues to rise, Bangladesh is unlikely to achieve the SDG 3 target of reducing deaths from NCDs by one third by 2030. Extra efforts are needed to create awareness through primary prevention.

The number of mass media activities for nutrition behaviour change is same

Mass media are one of the most important and influential tools for NBCC for sharing nutrition information and knowledge. More than two thousand six hundred mass media activities related to food and nutrition were recorded in 2018/19 including health bulletins, print media (newspapers), radio television and mobile applications in 2018-19 (Table 20). BTV, the national television, and the 12 private TV channels telecasted a wide range of programmes on food and nutrition on a daily, weekly and quarterly basis. BIRTAN developed a mobile application *Amar pushti* focusing on eight topics- applied nutrition, nutrients in food, balanced diets, malnutrition, nutrition in life cycle, cooking methods and safe food (Table 21). Popular newspapers, magazines and health bulletins published information on safe food, healthy diet,

nutrition and healthy lifestyle in their weekly, fortnightly and monthly copies. BIRDEM published two nutrition-related magazines which were widely distributed. In 2019-20 and 2020-21, similar programmes have been going on, so that the number of mass media activities will be almost similar i.e. 2606.

Table 21 - Number of mass activity for nutritional behaviour in 2018-19 including the themes of nutrition and health, and agriculture and technology

Sector	Subject of programme	Number of activities	Coverage
Bangladesh Television	Shukhi poribar, Shustho thakun, Maa o shishur bitorko, Shishu o nari, Shastho barta, Banglar krishi, Maati o manush, Krishok o binodon, Tothya batayan, Adhunik biggan	1,211	Nationwide
Private TV Channel	Channel 24, ATN, Jamuna TV, NTV, RTV, Channel i, Channel 24, Ekattor 71 TV, Independent TV, Somoy TV, ETV, Desh TV, Boishaki, Mohona TV	300	Nationwide
Bangladesh Radio	Shuker shoptahe thikana, Nari o shishu Unnoyan, Shashtho shokol shukher mul, Aponar shashtho, Aongona, Banni shikha, Jatio pushti prokolpo, Kishan bodhu, Banizzik karjokrom	300	Nationwide
Radio Community Program	Shashtho-e- shukher mool, (pramanno prog), Jatio pushti prokolpo 2016-2022, Bohirangon	36	Nationwide
BIRTAN	Amar pushti (mobile app)	8	Nationwide
Print media (newspapers & magazines)	Nutrition and health messages published on a weekly, fortnightly a monthly basis	736	Nationwide
BIRDEM	Kanti	3	1,500 copies
BIRDEM	Diabetes Newsletter (monthly)	12	48,000 copies
Total mass media activities		**2,606**	

The number of institutions promoting national dietary guidelines increased

Similar number of institutes have been promoting National Dietary Guidelines compare to previous year i.e. 18. In 2018-19, 18 institutions distributed around 2,280 copies of the national dietary guidelines both in hard and soft copy. Daffodil University, College of Home Economics Azimpur, Bangladesh College of Home Economics, The National College of Home Economics and Jashore University of Science and Technology used the guidelines as a practical module. Shomorita Hospital used the book as a reference for serving sizes, Recommended Nutrient Intake (RNI) values for accurate diet planning and dietary prescription for patients. Besides, BARI, BARC, BIRDEM and the Bangladesh Agricultural University (BAU) are also using the dietary guidelines in their research and training purposes. In the previous two years, only nine institutions (BIRTAN, MoA, BARI, BARC, INFS, BAU, BBF, FAO, IPHN, and DAE) had used these dietary guidelines for research and programme purposes.

6.1.2. Policy development, programmes and initiatives underway

The total budget of this programme was 138.7 million USD as of 30th June 2019, making it the second smallest programme of the CIP2. This is due to the nature of the projects covered under this programme which are relatively inexpensive, namely nutrition training and BCC, the promotion of dietary guidelines, and research, development and promotion of knowledge-based tools on nutrient-dense recipes with local foods using FCTs. This should not prevent the government and DPs from investing in this area in adequate measure, however. The financed budget has come so far in comparable amounts from the government

and the DPs. About half of the total financed amount can be attributed to the DGHS *Community Based Health Care* project which is also supported by UNFPA and USAID. 21% can be attributed to the joint EU-LGD *Support to Urban Health and Nutrition to Bangladesh* project. The rest are mostly small components of the NNS relevant to this programme.

Promotion of Dietary Guidelines for Bangladesh

The Dietary Guidelines for Bangladesh 2015 has been revised as a joint effort of the MoHFW and MoFood, BIRDEM, NNS-IPHN, with support from FAO and WHO and in partnership with other stakeholders. The process of revision started in 2018, continued in 2019 and has been finalized in 2020. The Dietary Guidelines for Bangladeshi Population 2020 are based on the principles of a food-based approach to healthy eating that can help improve the nutritional and health status of the population on a sustainable basis. It supports an eating plan of diverse nutrient-rich foods. The guidelines outline advice and messages for the general population and also for different ages and physiological groups that have increased nutrient needs, and certain therapeutic conditions. It is expected that the revised guidelines will serve as an educational tool and contribute to the improvement of nutrition awareness and behaviour change in the population. It is also intended to serve as a tool to guide health, agriculture and food policies and to stimulate demand for healthy foods. Therefore, it is important to promote food based dietary guidelines.

Promotion of nutrition through national events

Bangladesh has been celebrating a *National Nutrition Week* (NNW) on 23-29 April each year since it was reintroduced by the government in 2018. In 2019, the NNW was organized with the 'Think about nutrition if you think about food'. Activities, as well as mass-media campaigns, were organised to increase public awareness and disseminate information on tackling malnutrition and undernutrition with the use of locally available foods. On this occasion, BNNC, United Nations organisations, DPs, INGOs and NGOs jointly reaffirmed their commitment to collective action to accelerate the reduction of malnutrition in Bangladesh. The *Nutrition Olympiad* (NO) was celebrated as part of the NNW: it is a national event organised since 2017 targeted youth and adolescents. The theme of the 2019 NO was *'Foster Youth engagement for a well-nourished world'.* The one-day event involved activities to attract youth engagement such as a food design competition, street plays, and a healthy snacks competition. More than a thousand youths, government officials, international and national organisations, civil society, professionals, academia, and media participated in the event. NO offers the opportunity to Nutrition Clubs - constituted by school students, adolescents and youth – to receive regular mentorship and training from experienced nutritionists. Other important national events include the *World Food Day*, the *World Breastfeeding Week, the National Food Safety Day, World Food Safety Day, 3-day National Vegetable Fair, 3-day National Fruit Fair* and *World Egg Day*.

Initiation of the Nutrition Challenge Badge

The Nutrition Challenge Badge (NCB) is the outcome of the Youth and United Nations Global Alliance (YUNGA) Learning and Action Series, which is designed to help children and youth explore basic concepts of good nutrition, healthy and environmentally friendly eating habits and lifestyles through the nutrition clubs established under the programme. On completion of the assigned activities, the children are entitled to receiving an NCB. The *Meeting the Undernutrition Challenge (MUCH)* project, implemented by GoB and FAO launched the NCB in Bangladesh in collaboration with the BIID Foundation to coincide with Universal Children's Day. The target was to enrol 600 children, youth and adolescents from 20 selected schools in Sylhet, Dhaka, Rangpur, Chattogram, Mymensingh and Rajshahi.

Implementation of the school meal policy and programme

Nutritious meals for school children have a high return on investment as they improve children's health, increase enrolment in schools and productivity throughout their life. The government-led *School Feeding Programme in Poverty Prone Areas* project which has been running since 2013 started providing hot meals (see Programme IV.2). The meal is intended to be a healthy, fresh, locally-sourced meal that will fulfil part of the day's macro and micronutrients requirements. A National School Meal Policy 2019 was formulated and recommended that at least 30% of daily calorie requirement and 50% of daily micronutrient requirements of every primary school student be covered by school meals. This new policy will contribute to increase primary school attendance and reduce the dropout rates in the primary schools.

6.1.3. Needs for further actions under this programme

Revise and implement the National Strategy for IYCF

Despite the current progress in EBF, inappropriate infant feeding remains prevalent. The challenges related to optimum breastfeeding include socio-cultural beliefs that favour mixed feeding, a non-supportive health-system, inadequate skilled support at health facilities and community level, aggressive promotion of infant formula, milk powder and other breast-milk substitutes (BMS), inadequate workplace policies to support maternity and paternity leave legislation and poor knowledge of the benefits of EBF. Strict implementation of the BMS Act 2013 and compliance with the existing laws against infant formula or breastmilk substitutes are required. Poor dietary diversity of child feeding is another major concern. The NNS under the Health, Population and Nutrition Sector Programme (HPNSP) 2018-19, IPHN with the technical support of Bangladesh Breastfeeding Foundation (BBF) have been revising National strategy for infant and young child feeding for 2018-2025 which had not been updated since 2007. It will build on existing achievements and, based on evidence from Bangladesh and globally, provide a framework for actions to protect, promote and support the optimal IYCF. This revision process needs to be accelerated and the revised strategy should be implemented as soon as possible.

Promote healthy diets and lifestyles to prevent NCDs, including diabetes

Diets in Bangladesh tend to be carbohydrate intensive, with a predominance of refined grains. Moreover, emerging food-production technologies and supermarkets have made energy-dense foods more readily available. This includes refined carbohydrate foods with added sugars, refined grains and unhealthy fats. Altering diets by replacing refined cereals such as white rice with whole grains (e.g. brown rice), encouraging low glycaemic index meal along with high dietary diversity and increasing physical activity can help to prevent diabetes in high-risk individuals. This calls for introducing changes in policies related to healthy eating, enabling healthy environments and improving health systems to tackle NCDs. It is therefore recommended to scale up the Multisectoral Action Plan for Prevention and Control of Noncommunicable Disease 2018-2025. Under the fourth HPNSP for 2017-2021, the WHO Package of Essential Noncommunicable Disease Interventions protocol for early detection and management of cardiovascular diseases, diabetes, chronic respiratory diseases and cancer to prevent life-threatening complications (e.g. heart attacks, stroke, kidney failure etc.) is being rolled out at the primary care level like community clinics and upazila health complexes. As part of the protocol, patients diagnosed with hypertension and diabetes will be counselled about living a healthy lifestyle and provided with required anti-hypertensive and anti-diabetic drugs free of cost at the primary healthcare level. The outreach should be expanded through other health programmes such as immunization or family planning.

Promote under-utilised foods

Underutilised foods and especially Neglected and Underutilized Species (NUS) need to be promoted through food-based dietary guidelines, and the food composition tables must document the nutrient composition of such foods as well as ethnic foods. These foods which include minor cereals, special maize varieties, oilseeds, indigenous fish species, local fruits, vegetables and seeds are underutilised, despite having a much higher nutrient content than globally known species or varieties commonly produced and consumed. In addition to their superior nutritional qualities, many of these crops require fewer inputs, can be grown on marginal land and are easily intercropped or rotated with staple crops, and fit easily into integrated practices such as agroecology. Because they are frequently adapted to marginal conditions and often have the unique ability to tolerate or withstand stresses, NUS can make production systems more sustainable and climate-resilient. They are also less damaging to the environment and are culturally acceptable. Unfortunately, due to the urbanisation and transformation of eating habits towards increasing consumption of imported and processed foods, they are minimally consumed. Traditional foods should be promoted by preserving genetic species, highlighting their importance in the current production systems, and exploiting opportunities to enhance their production and consumption through production technologies, nutrition education and value chain development.

Integrate Nutrition Behaviour Change Communication (NBCC) into nutrition-sensitive programming

Integrating NBCC with nutrition-sensitive interventions such as homestead production of diverse, nutrient-rich foods and social protection programmes can have positive effects on the nutritional status and health of rural households, particularly among women and young children. Based on results of *Transfer Modality Resource Initiative (TMRI),* integrating intensive high-quality BCC in social protection programmes, more specifically in the social safety nets that provide sufficient amount to have an impact (1,500 BDT/per month) can improve household food security and child nutrition. Encouraged by the TMRI results, the Ministry of Women and Children Affairs (MoWCA) piloted the Investment Component for the Vulnerable Group Development (ICVGD) programme for destitute women, which adds a cash grant for investment, fortified rice distribution and nutrition BCC to existing Vulnerable Group Development (VGD) activities (see Programme IV.2). Lessons learnt from this programme, the existing nutrition-sensitive social safety net and agricultural programmes, need to be linked to BCC and nutrition education to have an impact on nutrition outcomes. NBCC should focus on enhancing dietary and nutrition knowledge for all, regardless of economic and social status, age or gender. Hence, appropriate contextualized BCC focusing on standardized and correct information on dietary knowledge, healthy cooking methods, nutrient dense-recipes, dietary diversity, appropriate IYCF practices, food handling, preservation, storage, food safety issues and WASH should be developed and disseminated.

6.2 Programme III.2 - Optimised food utilisation through provision of safe water, improved food hygiene and sanitation

With increased availability and accessibility of food, it is important to ensure adequate food utilisation for optimum food digestion and nutrient absorption and use by the human body. This Programme intends to scale-up the supply of safe water for consumption and domestic use (III.2.1); Ensure hygienic food handling, preparation and services, and scale-up handwashing behaviour (III.2.2); and Improve sanitary facilities and practices, including the prevention of animal cross-contamination, for reducing diarrheal disease and foodborne illness and child undernutrition (III.2.3).

6.2.1 Progress towards achievements

Table 22 - Outputs indicators and progress for Programme III.2

CIP2 output proxy indicators		2015/16 Baseline	2018/19	2019/20	2020/21	Source
Percentage of urban and rural population with access to safe drinking water [SDG6.1.1][246]	Urban	91%	93%	93%	-	DPHE (APA) MICS
	Rural	90%	90%	90%	-	DPHE(APA) MICS
Percentage of urban and rural population with access to sanitary latrines [SDG 6.2.1][247]	Urban	58%	70%	75%	-	DPHE(APA) MICS
	Rural	62%	75%	80%	-	DPHE(APA) MICS
Number of children ≤5 years admitted in upazlla health complexes, at district-level secondary hospitals and in medical college hospitals for diarrhoea and gastroenteritis of infectious origin[248]	National	148,078 (2015)	623,502 (DGHS/ MoHFW)	-	-	DGHS, Health Bulletin

… not available*

Access to safe drinking water remained static

Access to safe drinking water -defined as an improved source located on-premises, available when needed, and free from microbiological and priority chemical contamination- improved marginally in urban areas since the beginning of the CIP2, from 91% to 93% in the year under review. However, there was no progress in rural areas where the coverage remained at 90%. The 2019 MICS reported that 96.9% of the population has access to a basic water source when needed and that 98.5% use improved sources of drinking water. The country is on track to achieve 100% access to safe drinking water. However, in 40.3% of the cases, the water available to households and 81.9% of the drinking water was found to be contaminated by E. coli. Moreover, 18.6% of the population were still drinking arsenic affected water[249]- notwithstanding the improvement from 25.5% in 2012-13.

Access to sanitary latrines slightly improved

The political commitment of the government and the multisectoral approach adopted has led to remarkable progress in sanitation coverage and a reduction in open defecation The percentage of urban

[246] SDG indicator 6.1.1: Proportion of population using safely managed drinking water services. Here, 'Safely managed drinking water' is defined as the use of an improved drinking water source.

[247] SDG indicator 6.2.1: Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.

[248] From 2016/17, the information could only be obtained for 'Number of children ≤5 years admitted in upazila health complexes, district-level secondary hospitals and medical college hospitals *for diarrhoeal disease*, as opposed to *for diarrhoea and gastroenteritis of infectious origin*, which explains the sudden rise in cases.

[249] Containing 10 ppb arsenic concentration as per WHO standard.

population with access to sanitary latrines increased from 58% in 2015 to 70% in 2016, but has remained at this level ever since 2018-19. It has slightly improved to 75% in 2019-20. Similarly, in rural areas, access significantly increased from 62% in 2015 to 75% in 2018-19, however, it has increased to 80% in 2019-20. Despite significant progress at the onset of the CIP2, a large proportion of the population remains without access to sanitary latrines and is therefore at risk of faecal contamination that may harm the nutrition.

The number of under-five children admitted in health facilities for diarrhoeal diseases rose

According to WHO, diarrhoea is the second largest cause of mortality and morbidity worldwide among the under-five children. Adequate access to safe drinking water, improved sanitation facilities and hygiene practices including handwashing with soap and water can prevent a significant proportion of diarrhoeal diseases. The number of children admitted in primary, secondary and tertiary health centres for diarrhoeal and gastroenteritis infections increased from 464,740 in 2016 and 623,502 in 2018-19. Part of this substantial increase may reflect the raised awareness of the need to treat diarrhoea as it continues to be an important cause of death for children. This leads more people to visit health centres, where they may have treated the problem at home previously. Nevertheless, these numbers call for scaling-up integrated WASH and nutrition interventions. Handwashing is the most cost-effective health intervention to reduce the incidence of diarrhoea in children under five.

6.2.2 Policy development, programmes and initiatives underway

In this monitoring report, investments made under DPHE in water and sanitation have been included which has boosted the budget allocated to this programme. It now accounts for 7% of the entire CIP2 budget (8% of the nutrition weighed one) at 1.28 billion USD. This programme is mostly funded by the government, with DPs only representing 17% of the budget already financed. This is even lower that in the previous year where DPs were involved at the rate of 29%. While the pipeline is a mere 2.4 million USD, the budget planned beyond the CIP2 is 1.4 billion USD which shows that the emphasis placed on this programme is set to continue.

Scaling up WASH

The GoB Bangladesh has undertaken to strengthen the capacity of upazila water and sanitation committees to enhance WASH in rural areas. Along with the universal coverage of safe water and sanitation, the government is focused on improving water quality (free from chemical and microbial contamination) through the implementation of the Water Safety Plan 2014.[250] This includes the management of on-site and off-site sewage treatment and faecal sludge management. For WASH, commendable achievements have been recorded with, for instance, the proportion of the population with access to basic handwashing facilities increasing from 59.1% in 2012-13 to 74.8% in 2019.[251] Progress has been specially recorded in rural areas but in urban slums, the situation remains challenging. In the context of an ever-growing urban population, urban WASH and health are some of the critical challenges that the government needs to address. The Department of Public Health Engineering (DPHE), MoHFW and the Ministry of Local Government, Rural Development and Cooperatives (MoLGRDC) need to continue focusing on generating evidence and measuring the impact of their interventions.

Global Handwashing Day celebrated

In order to influence, inform and increase public awareness on the positive effects of handwashing, MoLGRDC and UNICEF successfully celebrated the Global Handwashing Day on the 15th of October 2018.

[250] WHO/SEARO/Country Office for Bangladesh (2014) *Water Safety Plan (WSP) -A Risk Based Approach for Water Safety.* Dhaka.

[251] Multiple Indicator Cluster Survey (MICS) 2019.

Around 1000 school and university children took part in the event and promoted the theme '*Clean hands – a recipe for health*'. As a community engagement strategy, the GoB included schools and school children to encourage behaviour change around WASH.

Technical Symposium on Nutrition-Sensitive WASH

The MoFood and MoLGRDC with support from FAO and WHO and technical collaboration from WFP and UNICEF conducted a symposium on Nutrition-Sensitive WASH on the 5th Nov 2018. This multi-sectoral collaboration was the evidence of the GoB's commitment to improved nutrition-sensitive WASH.

The COVID-19 effect

In May 2020, the GoB launched a strategic paper to respond to WASH issues during and after the COVID-19 outbreak. Among other measures, the pandemic led to sustained mass communication on hand washing. If this effect can be sustained, it could be beneficial for overall hygiene practices.

6.2.3 Needs for further actions under this programme

Promote public and private sector partnership for improved and innovative social and behaviour change communications

Innovative partnerships and models combining strengths of the public and private sector need to be implemented at scale. To realize the impact of WASH interventions, multi-sectoral actions are needed. The government needs to design and invest in programmes that address the full spectrum of WASH related issues. These include clean water proper sanitation facilities, availability of water and soap for handwashing and behavioural issues such as instilling the habit of handwashing with soap at critical times notably before preparation of food, washing babies, after using the toilet. Unfortunately, commercial financing in emerging markets currently makes up only a small portion of WASH investment in Bangladesh. WASH sector on average attracted only 3% of private sector participation in infrastructure projects.[252] Involvement of the private sector through partnerships must be promoted in order to enable behaviour change. Indeed, the public sector can benefit from utilising the outreach and social marketing platforms of the private sector to reach a larger audience in their mission to positively affect behaviours.

Integrate nutrition-sensitive WASH in policies and programmes

Nutrition and WASH are interconnected and correlated. Studies have established that when WASH interventions are combined with nutrition interventions, the level of stunting can be greatly reduced. In UNICEF's causal framework of malnutrition, the two immediate causes of malnutrition are inadequate dietary intake coupled with sub-optimal feeding and care practices in the first two years of life and high rates of infectious disease due to predominantly unhealthy environment. A meta-analysis carried out by UNICEF shows that improved sanitation and drinking water integrated with other nutrition and health interventions can bring about a decline in child stunting. Stunting reduction is driven by safe water and sanitation, women's education and empowerment and the quantity and quality of food. Income and governance play key facilitation underlying roles.[253] This also calls for strengthening coordination between MoHFW, MoLGRDC, United Nations Organisations, CSOs and the private sector to integrate nutrition-sensitive WASH in their policies and programmes. Strategies should focus on access to affordable safe drinking water, expansion of programmes for control and prevention of cholera and diarrhoeal diseases,

[252] WWAP (UNESCO World Water Assessment Programme) (2019) *The United Nations World Water Development Report 2019: Leaving No One Behind.* Paris. UNESCO.
[253] Smith L.C. & Haddad, L. (2015) *Reducing child undernutrition: past drivers and priorities for post-MDG era. World Development. 68. 180–204.*

promotion of hygienic food handling, preparation, services, protective display of food, and scale-up handwashing behaviour, disposal of garbage and hygienic waste (food and non-food) safely for human health protection, improvement of sanitary facilities and practices, including prevention of animal or human to human cross-contamination for reducing water and foodborne illness including diarrhoeal diseases.

7 Progress towards Outputs for Outcome IV

7.1. Programme IV.1. Timely and effective disaster preparedness and responses through emergency food distribution, agriculture rehabilitation and mitigation measures

This programme aims to ensure that systems are in place to protect vulnerable groups' food and nutrition security before, during and after disasters. It consists of three sub-programmes: 1) to increase the resilience of agricultural systems, including the production of disaster-resilient nutritious crops especially by vulnerable populations; 2) to ensure social and economic access to food for the poorest sections of the population in times of crisis and in areas most affected by the disaster; and 3) to scale-up modern food storage facilities for an improved Public Food Distribution System (PFDS) particularly in disaster-prone areas

7.1.1 Progress towards achievements

Table 23 - Programme IV.1: Outputs indicators and progress against the baseline

CIP2 output proxy indicators	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
No. of usable cyclone shelters	3,768 (2014)	3,868	3,968	4068	4168	DDM/LGED
Number of rural communities with disaster resilient habitats and communities' assets	7,334 (2013)	7,934	11,604	12000	35,000	DDM
Direct gender budgeting as % of MoDMR revised budget	45.8%	34.7%	34.72%	63.36%	71.12%	MoF
Total internal Foodgrain procurments PFDS (thousand MT)	1231	1429	2415	1472	1553	DG Food
Distribution of food grain through PFDS (thousand MT)	2064	2117	2594	2777	2289	DG Food
Distribution of food grain through PFDS in relief work (thousand MT)	1,216	1,102	1,207	1,175	729	FPMU
Effective grain storage capacity at close of fiscal year (thousand MT)	1,870	1,877	2,030	2017	2062	ITDS, Food Directorate
Average use of effective GoB food grain storage capacity	75%	52%	73%	81%	45.05%	MISM, Food Directorate
Actual closing stocks as % of secure stock	84.8%	116%	152.2%	106.6%	138%	National Budget, FPMU Stock Flow Table

The number of cyclone shelters increasing gradually

After no increase in 2017/18, the number of usable cyclone shelters increased to 3,968 in 2018/19 and further increased to 4,068 in 2019/20 and settled at 4,168 in 2020/21. Though this is substantially short of the 7FYP target of 4,347. The *Multipurpose Disaster Shelters Project (2014 to 2020)* plans to construct 552 new shelters and rehabilitate 450 existing shelters in nine coastal districts[254], but as of Nov 2021, the project's physical delivery was 50%, the Executive Committee of the National Economic Council (ECNEC) approved the extension of the project to June 30, 2023. The shelters built serve as primary schools, and when cyclones and other natural disasters occur, they double up as shelters. Emphasis is also given to building connecting roads and communication networks to shelters to ensure easy accessibility. From June 2018 to June 2019, Bangladesh experienced one significant cyclone, Feni, in May 2019. Major human loss

[254] World Bank (2017) *Multipurpose Disaster Shelter Project: Implementation Support Mission*.

was avoided[255] after 1.2 million people were evacuated and moved to cyclone shelters in 19 coastal districts.

The number of rural communities increasing significantly in disaster-resilient habitats and communities' assets

After increasing 600 rural communities in 2017/18, the number of rural communities with disaster-resilient habitats and assets increased from 11,604 in 2018/19 to 12,000 in 2019/20 and 35,000 rural communities has been increased in 2020/21. Disaster resilient habitats and assets incorporate structural safety, adaptive technology, sustainable livelihoods, early warning and community cooperation. Short-term recovery measures must be followed by adequate investment in long-term risk reduction so that communities are not trapped in repeated disaster-cycles.[256] For example, the *Haor Flood Management and Livelihood Improvement Project (2014 to 2021)* is investing in livelihoods and infrastructure to reduce risks of flash floods in north-east Bangladesh.[257] FAO supported the *SAFE Plus Project* to plant half a million tree seedlings for reforestation in Cox's Bazar, to help regulate the watershed, reduce floods and landslides, provide materials for livelihoods and fuel, and conserve biodiversity.[258] The Asia-Pacific Disaster Report 2019 estimates that 78% of the population of Bangladesh lives in 'high-multi-hazard-risk areas'.[259]

The gender budget significantly enhanced under the Ministry of Disaster Management and Relief

The direct gender budget in the total budget of the Ministry of Disaster Management and Relief (MoDMR) increased to 63.36% in 2019/20 than the previous year which was 34.7%, and this is a significant rise against the baseline figure of 45.8% in 2015/16. In 2020/21 the gender budget has changed significantly from 63.36% to 71.12%. The role of women in disaster preparedness and response is now widely recognized and it is important that implementation of gender-sensitive approaches continue. The National Women Development Policy 2011 calls for specific gendered design in disaster preparedness and responses, including equitable access, relevance to girls' and women's lifecycle and personal security. Women's vulnerability is greater due to lower social-economic status, information and skills, and in past disasters death rates have been higher amongst women, e.g. 91% in the 1991 Bangladesh cyclone, 61% in the 2008 Myanmar cyclone, and 70–80% in the 2004 Indian Ocean tsunami.[260]

Total internal Foodgrain procurment in PFDS (thousand MT)

Actual foodgrain procurement from internal sources during FY2019-20 was 1472 Mt, and it has increased to 1553 (Paddy 421 Thousand Mt, Rice 1,176 Thousand Mt, in terms of total Rice 1,450 Thousand Mt and Wheat 103 Thousand Mt) in 2020/21.

Government foodgrain distribution marginally increased

Food grains distribution through the Public Food Distribution System (PFDS) during FY2020/21 was 2289 thousand mt, against the revised target of 3104 thousand mt set in the public food budget. Public food distribution through the Food Friendly Programme FFP (Khadya Bandhob Karmasuchi)- targets to 5 million ultra-poor rural households was highest (0.89 mmt), followed by the Vulnerable Group Development

[255] Dhaka Tribune (2019) *Relief, as Cyclone Fani crosses Bangladesh with no major disaster*. 5 May.
[256] Sadik, Md. S., Nakagawa, H., Rahman, R., Shaw, R., Kawaike, K. & Fujita, K. (2018) *A Study on Cyclone Aila Recovery in Koyra, Bangladesh*. *International Journal of Disaster Risk Science.* 9: 28–43.
[257] JICA (2018) *Bangladesh Our Profile*; JICA (2016) *Haor Flood Management and Livelihood Improvement Project.*
[258] FAO (2019) *Nearly half a million trees planted in two months: FAO restores degraded forests and watersheds in Cox's Bazar.*
[259] United Nations (2019) *Asia-Pacific Disaster Report 2019*. Bangkok. ESCAP.
[260] Habtezion, S. (2013) *Gender and Disaster Risk Reduction*. Global Gender and Climate Alliance and UNDP. New York.

(VGD), Open Market Sale (OMS), Essential Priorities (EP) , Vulnerable Group Feeding (VGF), Gratuitous Relief (GR), Food For Work (FFW), Hill Tract Area (HT), others priorities (OP), Large Employee(LE), Test Relief (TR) and other channels of PFDS. The PFDS distributes foodgrain targeted to poor and vulnerable people through different programmes to address emergency and non-emergency food insecurity. The total distribution in relief program decreased marginally to 1,175 thousand MT in 2019/20, which is somewhat lower than at baseline.

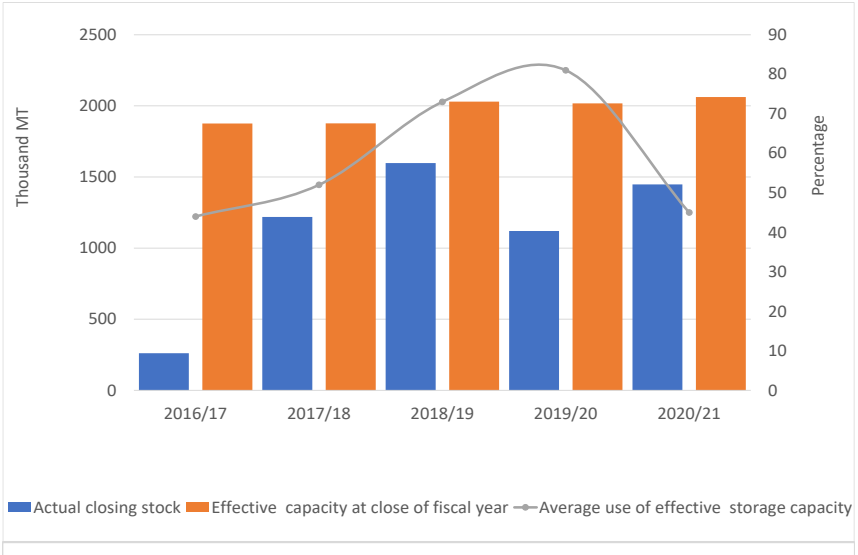
Total Public grain storage capacity improved marginally but effective capacity decreased slightly

Total storage capacity for foodgrain reached to 2,151 thousand MT in 2019/20, slightly increased from the previous year. At the same time during 2020/21 Total foodgrain storage capacity rose to 2,209 thousand MT. However, Effective Grain storage capacity reached 2,017 thousand MT in 2019/20, slightly decreased from the previous year (Figure 21). This comes after several years of stagnation (2019)[261] find that the functional/useable capacity of the entire storage system is in reality, 10% lower for a number of reasons. One example is that of warehouses whose floor was raised by several feet to avoid infiltration of water, which in turn reduced the overall storage capacity of the warehouse. To reduce foodgrain losses by 50% The *Modern Food Storage Facilities Project (2014- 2020)* plans to create another 535,500 MT of storage capacity and modernise management. However, there are delays in the constructions of the first three of the planned eight silos due in April 2021, so the project is being extended from June 2020 to April 2022, and the expected final cost is raised to USD 412 million.[262]

Satisfactory use of effective GoB foodgrain storage capacity

The average use of foodgrain storage capacity in 2019/20 was 81%, which shows a 6% increase than the baseline year, after two years of low utilisation (Figure 21) and average use of food grain storage capacity decreased from 81% to 45.05% in 2020/21. A 75% utilisation may be considered close to full capacity utilisation given the seasonality of procurement and the impossibility of attaining full capacity utilisation for more than a short time in traditional storage facilities. The improvement of utilisation of storage capacity suggests a greater ability to respond to unexpected shocks using the PFDS.

Figure 21 – GoB foodgrain closing stock, effective storage capacity and average use of storage capacity



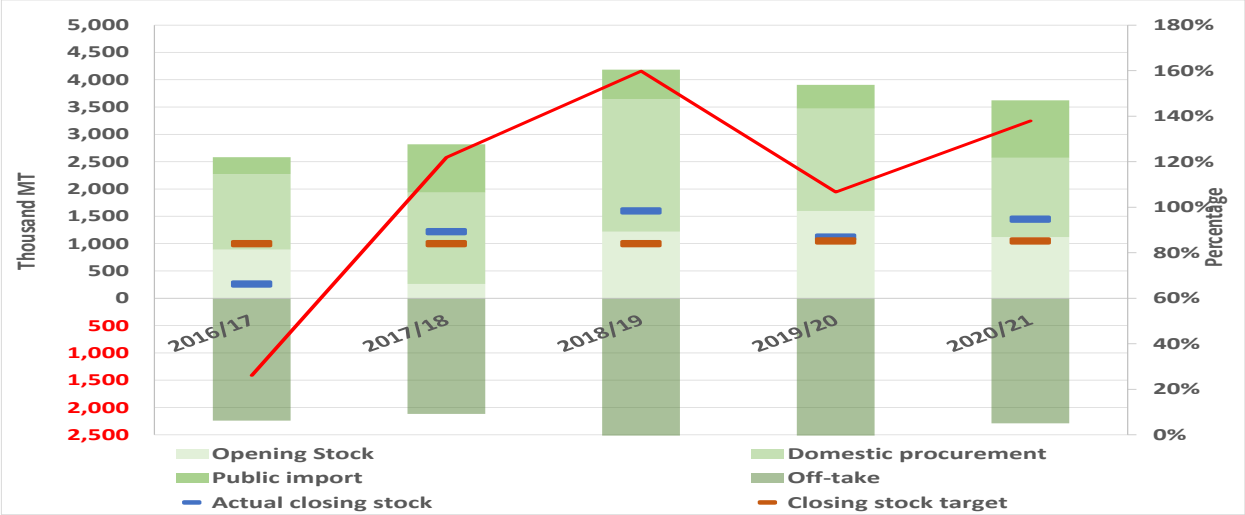
[261] Kabir, R., Yunus, Md., Hossain, T. & Rashid, S. (2019) *Public food grain storage facilities in Bangladesh: An assessment of functionality, repair needs, and alternative usage*. *IFPRI Working Paper* 2. Washington, DC.

[262] World Bank (2020) *Proposed Project Restructuring of Bangladesh Modern Food Storage Facilities Project*. *Report RES31459*; World Bank (2019) *BMFSFP: Implementation Status and Results Report 12*; World Bank (2019) *BMFSFP: Implementation Status and Results Report 13*; World Bank (2020) *BMFSFP: Implementation Status and Results Report 14*.

Actual closing stocks slightly decreased from the previous year

Compared to the budgeted target, actual closing stocks moderately decreased to 74% in 2019/20 from 129% in 2018/19. Figure 22 shows how the GoB adds imports and domestic procurement to the public imports, opening stocks on the one hand, and distributes foodgrain through the PFDS. The closing public stock of food grains on 30th June/20 was less than same period of the previous year. The reason of low quantity public stock was high volume of rice distributed through 'Food friendly Program' and Open Market Sale (OMS) during lockdown period of last fiscal year. Internal Procurement from last Boro and Aman season were not satisfactory which contributed present public stock. A reasonably high level of stock may be considered adequate to meet the requirements for PFDS operations in the coming months. To maintain a healthy stock government has planned to procure food grains from both internal and external sources. Moreover, government has taken initiative about 1.00 mt rice import from external sources to maintain a secure public stock for PFDS operation as well as food price stabilization.

Figure 22 - Opening GoB foodgrain stock, intake and offtake, closing stock budget target and actual closing stock as % of target



Source: Data from ITDS, Food Directorate and MISM, Food Directorate

Enhanced early warning information through regional and global initiatives

Five important initiatives aimed to enhance early warning information continue in place, namely: the Cyclone Preparedness Programme, Red Crescent Volunteers, and Interactive Voice Response technology through mobile phones. World Bank *Bangladesh Weather and Climate Services Regional Project (BWCSRP)*, which is to run until 2023 seeks to modernize the country's weather, water, and climate information systems for forecasting and strengthening of, service delivery in priority sectors and communities. The project will also undertake pilotting a community-level early warning system for flash floods, thunderstorms and droughts in four districts and is to set up an Agrometeorological Information System portal, agromet information kiosks in 487 upazilas and agromet display boards at 4,051 Unions. Finally, the *Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES)* which was established in 2009 focuses on building joint efforts for enhancing capacity building of national to local level institutions on all aspects of end-to-end early warning, within each Member States early warning frameworks.

7.1.2 Policy development, programmes and initiatives underway

Invest in emergency shelters, disaster proofing infrastructure and early warning systems

The Government has invested more in emergency shelters and disaster proofing infrastructure. A key initiative has been implementing multipurpose buildings, based on the experience of the Multipurpose Disaster Shelters Project, which is constructing 552 new shelters and rehabilitating 450 existing shelters in nine coastal districts. Facilities in existing shelters will be upgraded, especially for water, sanitation and healthcare; space for childcare; facilities for pregnant women; separate women's toilets; physical accessibility for the elderly and people with disabilities; protection of personal security for women and girls; and safe storage. To enhance the coping ability of families and communities by making infrastructure for basic services more resilient to disasters. Resilient and upgraded schools, clinics and other public buildings will serve as shelters.

Adopt measures and infrastructure to enhance water management

For its deltaic character, In Bangladesh, water management is crucial for the adoption of wider adaptive technologies and practices. Many of the new seeds, breeds, varieties and innovations need linkage to water management as an enabler, particularly by small producers. To relieve groundwater depletion across the country rainwater harvesting and storage tanks will be promoted. There is great scope to improve water harvesting and retention through the use of pools, dams, pits, retaining ridges, and increasing soil organic matter to heighten the water retention capacity of soils. Water use efficiency needs to be strengthened through sprinkler, drip and micro-irrigation. BADC and BMDA should better incentivize water saving irrigation devices. This action is linked to 1.1.3. Expansion and promotion of the use of water-efficient and environmentally friendly alternative irrigation technologies, including surface irrigation.

Strengthen logistics in disasters

The Government will build on existing work to strengthen logistics in disasters. In 2019, Bangladesh started mapping national logistics capacities and stakeholders, and assessing logistics gaps in partnership with the Global Logistics Cluster of the Inter-Agency Standing Committee.[263] The purpose was to define a Logistic Preparedness Action Plan and to make operational a Preparedness and Response Platform that combines mapping, imagery, early warning, crowd-sourced information and logistics. This process will be followed-through, developed and incorporated into the national disaster management system.

Digitalize public procurement, management and monitoring

Digital management and monitoring tools will be helpful to complete effectively and efficiently all activities of the PFDS in a prompt way. The digital PFDS system is to be settled for easy access to all stakeholders by reducing hassle free food grain management. Public food stock management involves in monitoring of stock movement, stock rotation, and storage and transit losses. It helps to minimize the leakage in the process of food grain storage and stock maintenance. Besides, the PFDS can be feasible to manage cost effectively with the allocated budget.

Integrate public imports with public food operations to maintain reasonable buffer stocks

During natural disasters and emergency period, the buffer stock ensures to mitigate the food shock. The public procurement covers to maintain the stock regularly. If the production hampers, then food grain availability reduces in the market and the procurement target cannot be achieved to maintain minimum buffer stock. In this condition, food balance sheet (FBS) is maintained by importing food grain. Because

[263] IASC Logistics Cluster. 2019. Simulation-based Logistics Gap Analysis Workshop, IASC Logistics Cluster (2019) Quarterly Update July – September 2019 Bangladesh Preparedness

the public food distribution system is closely related with food stock, distribution, and market price. The market price of food item is generally determined by seasonal supply of and demand for food of the country. The shortage of food supply and reduction of food stock will meet by the import of food. Declining trend of food supply in the market tends to increase the price level. To stabilize the market price, the government can intervene to increase the food supply from the stored food grain through open market operations. So, the FBS could be properly maintained by importing food grain for the public food operations.

7.1.3 Needs for further actions under this programme

Develop technology-based modern storage facilities

Food grain quality includes a range of properties that can be defined in terms of physical, sanitary and intrinsic quality characteristics. The quality properties of a grain are affected by its genetic traits, the growing period, timing of harvest, grain harvesting and handling equipment, drying system, storage management practices, and transportation procedures. Besides, maintaining moisture content and temperature are very important for protecting quality of stored food grain.

Refurbish and construct new warehouses for food grain storage

The physical facilities under the PFDS are necessary to modernize, upgrade and extend for improvement of quality and prevent deterioration of stored foodstuffs in the public food distribution system (PFDS). The available physical facilities are not enough to maintain quite good standard in the quantity and quality for food stocks. In this aspect, the required number of warehouses are needed to construct to increase capacity of food store. On the other hand, the old warehouses are to be refurbished for modernizing and enhancing the food storing capacity.

Expand the use of the digital applications for the management of PFDS

A Krishoker App has been piloted to relieve the complexity of existing manual procedures in the rice procurement system. Farmers apply to participate in the procurement drive and the computer system selects a fixed number of them through a lottery system. Besides the Directorate of Food has introduced an inspection report management software, foodgrain movement programming software and food database which help to oversee the foodgrain procurement, distribution and stock management. The system also provides a facility to devise national procurement targets and determine procurement targets for individual farmers/rice mills accurately. The web-based food grain procurement management system in place allows to gauge the procurement status of paddy/rice across the country at any point in time. These initiatives will be rolled out for the management of PFDS efficiently.

Rollout and distribute the stored food grain on a regular basis

It is urgent to maintain minimum buffer stocks to mitigate the emergency and shocks during the food crisis. But, holding higher stocks and keeping distribution constant would entail substantial quality losses, unless alternative means of rotating stocks are taken. Because food grain stocks serve dual purposes that provide working stocks for routine distribution and serve as security stocks for emergency distribution. Increased food grain procurement needs more storing facilities and it increases stock levels. Simultaneously, it is necessary to increase distribution for rolling out otherwise, it will loss quality due to long storing duration. In this process, the old stocked one is to be allocated for distribution and newly procured food grain will be stored for further allocation for distribution. Because, long duration stored food grain will automatically deteriorate in quality. But the rollout is hindered sometimes due to lack of

monitoring. The rollout system will ensure the less duration of stored food grain that helps to maintain the quality of stocked food grain. So, maintaining good quality storage, effective stock management and minimizing leakage will be done by the rolling out and distributing the stored food grain. The regular distribution and rollout from the stock is helpful to maintain the food quality and protect the deterioration of the food quality.

Strengthen logistics in national disaster management system

The Government will build on existing work to strengthen logistics in disasters. In 2019, Bangladesh started mapping national logistics capacities and stakeholders, and assessing logistics gaps in partnership with the Global Logistics Cluster of the Inter-Agency Standing Committee.[264] The purpose was to define a Logistic Preparedness Action Plan and to make operational a Preparedness and Response Platform that combines mapping, imagery, early warning, crowd-sourced information and logistics. This process will be developed and incorporated into the national disaster management system.

Adopt and upscale technologies and practices for "disaster hotspot"

Many good technologies and practices are sitting on the "technology shelf" waiting to be scaled-up, and the Government will address this inertia by shortlisting technologies and practices for upscaling for each "disaster hotspot" identified in the BDP 2100, viz.: 1/ Coastal zone; 2/ Barind zone; 3/ Haor zone; 4/ Chattogram Hill Tracts; 5/ River Systems. Initially the Government will prioritise for scaling-up a few technologies, varieties and practices most beneficial or scalable for each hotspot. Extension and Advisory Services (EAS) will be delivered by Government agencies and also in partnership with NGOs and DPs. Gradually more technologies, varieties and practices will be prioritised for each hotspot.

Develop insurance schemes through public-private-NGO cooperation

There is a need to facilitate the development of insurance schemes via public–private–NGO cooperation for losses due to disasters and climate change by supporting needs assessments and providing technical assistance. Bangladesh has been working in this area, and there is a need to expand and concretise the efforts. This would include the ADB-funded Pilot on Weather Index-Based Crop Insurance, Swiss-funded Bangladesh Microinsurance Market Development Project 2017-2021, and the World Bank-funded Bangladesh Insurance Sector Development Project 2017-2022.

Enhance attention to nutrition in disaster preparedness and response

This action will ensure more attention to nutrition in disaster preparedness and response. Nutrition Coordination Committees should be part of disaster preparedness and responses. Nutrition-specific measures should be better integrated into disaster-responses to support continued breastfeeding during disasters, the quality and availability of complementary foods especially for 6-23-month-olds, micronutrient supplementation where suitable, and timely identification and appropriate treatment of severe malnutrition. During the COVID-19 pandemic, nutrient-dense food, such as pulses, nuts, edible oil and dried-fish were included in food distribution, and this will be incorporated as a key feature of disaster response going forward. Gender is a critical consideration given women's roles in food preparation, childcare and family hygiene. Broader nutrition-sensitive measures, such as for water, sanitation and healthcare need greater emphasis. Both human and monitoring capacities need to be strengthened at all levels of the disaster planning and response framework.

[264] IASC Logistics Cluster. 2019. Simulation-based Logistics Gap Analysis Workshop, IASC Logistics Cluster (2019) Quarterly Update July – September 2019 Bangladesh Preparedness

7.2. Programme IV.2. Strengthened social protection and safety net programmes for targeted groups across the life cycle, including disabled and displaced populations

Under this programme, the effectiveness, targeting and content of social safety net programmes are improved to provide better protection to different vulnerable groups. This is done through the following three sub-programmes: 1) Expand and strengthen safety net programmes across the life cycle supporting vulnerable groups, such as poor women, children, the elderly, disabled people and displaced populations; 2) Expand and strengthen programmes for supporting people living in vulnerable and disadvantaged areas (char land, riverbank, *haors*, hill tracts and urban areas); and 3) Introduce nutrition-sensitive social safety net programmes (SSNP), including food fortification, especially for mothers and children.

7.2.1 Progress towards achievements

Table 24 – Programme IV.2: Outputs indicators and progress against the baseline

CIP2 output proxy indicators	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
n. of beneficiaries in VGD programmes (thousand)	750	750	1000	1040	1040	Mowca
Number of children covered by the School Feeding Programs in Poverty Prone Areas (in thousand)	283	295	316	2757	3000	Mopme
Budgeted coverage of Employment Generation Programme for the Poorest (in hundreds of thousands of beneficiaries)	8.27	8.27	8.27	26.50	19.18	MoF
Safety net programmes expenditures as % of total revised budget	12.72%	13.54%	13.81%	14.21%	16.83%	MoF/ GED

VGD's outreach has expanded but the ICVGD has not been upscaled

Vulnerable Group Development (VGD) coverage slightly increased to 142.47 hundred thousand person months in 2019/20, from 139.8 hundred thousand person months.[265] The Investment Component for VGD (ICVGD), piloted with 10,000 beneficiaries, adds a cash grant of 15,000 BDT for investment, 30 kg of fortified rice, and training on livelihoods, entrepreneurship, financial management and nutrition BCC. After this pilot phase, the ICVGD is to be upscaled to 100,000 women in 64 subdistricts from 2019/20. A study by IFPRI[266] found, *inter alia*, that whilst VGD targeted female-headed households with no income-earning adult male or with no other source of income, 30% of such households received remittances making them rather well off. The Ministry of Women and Children Affairs adopted IFPRI's improved targeting criteria in January 2019, which are more observable, verifiable, and correlated with poverty.[267] The GoB decided to include into VGD 40,000 women specifically from Cox's Bazar, half of which are in the *Enhancing Food Security and Nutrition Project (EFSN)*, which provides vulnerable women USD 12 monthly, entrepreneurship training and a USD 180 grant to start a small business. The linkage of these two programmes was intended to create a more comprehensive coverage in Cox's Bazar, where food security and nutrition have been strained by the ongoing Rohingya crisis.

[265] GoB (2020) *Social Safety Net Programmes Budget.* Ministry of Finance.
[266] Ahmed, Akhter (2018) *Assessing indicators for selection of participants for the Vulnerable Group Development (VGD) program in Bangladesh.* Dhaka, Bangladesh and Washington, DC: IFPRI.
[267] Ahmed, A. and J. Ghostlaw (2018) *A Bureaucratic Catch-22: Study in Bangladesh shows how Safety Nets can Overlook the Poorest*. IFPRI Blog: Research Post.

The School Feeding Programmes in Poverty Prone Areas Decrease Due to Covid Pandemic

The School Feeding Programme in Poverty Prone Areas, begun in 2013, provides school children in selected areas biscuits fortified with vitamins and minerals and hot meals using locally-sourced vegetables, lentils and micronutrient-fortified rice and oil. Students' attendance has grown by 11% in schools where cooked meals are being served, and by 6% where biscuits are being served. Coverage expanded from 2.95 million children in 2017/18 to 3.16 million in 2018/19, but the number reduced to 3.00 million in 2020/21 due to Covid pandemic. The GoB has a plan to universalize the school feeding programme by the fiscal year of 2023/24.

The budget allocation for the *Employment Generation Programme for the Poorest* remained unchanged

The *Employment Generation Programme for the Poorest (EGPP) Programme* has provided employment of 80 days in a year, in two phases during the seasonal lean period, for 8.27 hundred thousand individuals since 2015/16. This represented 3.7% of the government's social protection budget in 2018/19. Beneficiary households have seen improvements in lean season food intakes, including protein; household savings and resilience; and investments in health. Moreover, this programme is particularly beneficial for women who have fewer employment options during low seasons.[268] Due to combinations of geographic targeting, eligibility criteria, gender quota and self-selection, targeting performance of *EGPP* has been better compared to that of other safety net programs in the country.

Government expenditure in social safety net programmes increased over time

There are many social safety net programmes that prevails in the country to support people who have lagged behind. A good portion of the government budget is crucial to run those safety net programmes. The net amount of safety net budget grows over time. In 2015/16, the total safety net budget incurred 12.72% of the total, whereas it was 16.83% during the 2020/21 period that contribute to 3.01% of the total GDP.

7.2.2 Policy development, programmes and initiatives underway

Initiation of electronic payment of benefits

Bangladesh government has introduced direct payment of social protection from the government to person (G2P) through electronic fund transfer directly into bank accounts or mobile bank accounts of beneficiaries. Piloting began with maternity allowances and old age allowances in seven upazilas. The nationwide system is planned to be rolled out in FY20. A recent research conducted by a2i[269] showed that digital payments of SSN allowances could save the government up to USD 15 million annually. Notably, the Department of Disaster Management (DDM) currently makes digital payments under the *EGPP* in nineteen sub-districts.[270] A budget of 2.82 crore taka was allocated in 2018/19 for cash transfer modernization.

Study to determine the viability of a National Social Insurance Scheme initiated

The National Social Security Strategy (NSSS) foresees the development of National Social Insurance Scheme (NSIS) to prepare for a projected ageing population (see Figure 23). The social security system

[268] World Bank and KWPF (2019) *Program Brief- Employment Generation Program for the Poorest Bangladesh.*
[269] a2i (2019) *Accelerating G2P payment digitization.* Government of Bangladesh.
[270] World Bank (2019) *Restructuring Paper: Safety Net Systems for the Poorest.*

needs to evolve gradually to incorporate formal employment policies and social insurance schemes.[271] The Finance Division plans to initiate a scheme and a viability study was commissioned.

Bangladesh National Forum for the Elderly

A National Forum for the Elderly (Bangladesh Jatiya Prabin Mancha) was launched in 2018 to enhance implementation of the government's policies for the elderly. The platform is comprised of different organisations, as well as the MoHFW and the Ministry of Social Welfare. The National Policy on Older Persons (2013) and the Maintenance of Parents Act (2013) covers food, clothing, shelter, medical services and companionship, including through non-contributory pensions and social assistance, and gradually and increasingly contributory pension schemes, and they include measures to increase employment opportunities of older persons and to address the needs of older persons in disasters.[272]

Extend and integrate Nutrition Behaviour Change Communication (NBCC) into social protection

Integrating NBCC with nutrition-sensitive interventions such as homestead production of diverse, nutrient-rich foods and social protection programmes can have positive effects on the nutritional status and health of rural households, particularly among women and young children. Based on results of the Transfer Modality Resource Initiative (TMRI), integrating intensive high-quality BCC in social protection programmes, more specifically in the social safety nets that provide enough to have an impact can improve household food security and child nutrition. The Ministry of Women and Children Affairs (MoWCA) has piloted the Investment Component for the Vulnerable Group Development (ICVGD) programme for destitute women, which adds a cash grant for investment, fortified rice distribution and nutrition BCC to existing Vulnerable Group Development (VGD) activities. The pilot programme should be extended for the nutrition vulnerable population of the country. Thus, the programmes are helping to enrich the nutrition sensitive interventions through NBCC. Hence, appropriate contextualized NBCC focusing on standardized and correct information on dietary knowledge, healthy cooking methods, nutrient dense-recipes, dietary diversity, appropriate IYCF practices, food handling, preservation, storage, food safety issues and WASH should be developed and disseminated.

7.2.3 Needs for further actions under this programme

Gear up Food Friendly Program with fortified rice

In two phases during March-April and September-November, the Food Friendly Program (FFP) sells subsidized rice. There is a relatively easy opportunity to make this social protection programme more nutrition sensitive by including fortified rice. As FFP targets vulnerable families this will contribute considerably towards the nutrition of prioritized groups. The program is needed expansion to address the nutrition vulnerable poor people including fortified rice to sale in low price round the year.

Plan to include nutritious foods under the PFDS

In response of Covid-19, to bridge the nutrient gap of poorer population, part of targeted safety net programmes, packages of fortified rice, rice flakes, lentils, molasses, fortified biscuits, and oil were distributed. Guidelines will be prepared to amend the PFDS permanently – learning from the Covid-19 experience- to include nutritious foods in addition to foodgrain at subsidized prices. The possibility of

[271] GoB (2018) *Social Insurance and Its Prospects in Bangladesh Under the Purview of National Social Security Strategy (NSSS) and Action Plan*. Social Security Policy Support (SSPS) Programme. Cabinet Division and General Economics Division.
[272] Mazumder, Md. M.K. (2018) *Bangladesh: Progress towards MIPAA implementation*; PKSF (2018) *Quarterly Newsletter April-June.*

including dried fish will be explored. Which sections of the population it will support will need to be decided based on an assessment of the needs of and benefits to the recipients as well as the cost and complexity of operationalization.

Expand social protection programmes to young people

Apart from vocational training, poor and vulnerable youth need specially designed on-the-job experience and life-skills. In 2017, Labour Force Surveys estimate youth not in education, employment or training (NEET) increased to 30% from 25% in 2013. The National Youth Policy 2017 should guide interventions but is not strongly implemented in productive social protection programmes. Initially interventions will involve promoting agribusiness and agri-entrepreneurship, especially given the changing characteristics in the agriculture sector in the coming decade, such as greater mechanisation and less access to land. The National Service Programme for young people with schooling, covering one-lakh beneficiaries in 2020/21, will be improved, better linked to job-market opportunities, and scaled up.

Expansion of the social protection programmes for nutritionally vulnerable women of reproductive age and children during the first 1000 days

Targeting on women of reproductive age and children during the first 1000 days (from pregnancy to their second birthday) is the most efficient way to break the inter-generational cycle of malnutrition and poverty by ensuring the adequate growth and mental development of children. The Ministry of Health and Family Welfare (MoHFW), services and should expand interventions with supplementary nutritional food according to the dietary guidelines of Bangladesh under the social protection programmes. It aims to improve nutrition outcomes and wellbeing with a focus on mothers and children, especially in their first 1,000 days of life, by shaping food systems through the promotion of nutrition-sensitive investments. Besides, maternity allowance will provide for the poor pregnant women to support for purchasing nutritious food.

Introduce Child Benefits Scheme

The Government is planning to launch a Child Benefit Scheme, and in 2018 established a Policy Guidance Unit under the Cabinet Division which will support its design and implementation. As an initial step, in the 8FYP the Government will start a cash transfer with 100% coverage for children 0 to 5 years old in Rangpur and Mymensingh divisions 60% coverage in Rajshahi and Khulna divisions, and 40% coverage in Dhaka, Chattogram, Sylhet and Barishal divisions. Coverage will be expanded, if feasible. Similar steps will be taken towards universalisation of the NSSS's other core lifecycle cash transfer programmes.

8. Progress towards Outputs for Outcome I

8.1. Programme V.1. Improved food safety, quality control and assurance, awareness on food safety and hygiene

This programme aims to improve food safety through the introduction of good practices at all steps of the food supply chain complemented by awareness raising and measures to ensure that foods are safe to be consumed. The aim of each one of the four subcomponents is to: 1) ensure conformity of foods for consumption facilitated through the accreditation of certification agencies, inspection agencies and laboratory services; 2) introduce and popularise Good Agricultural Practices, Good Aquaculture Practices and Good Husbandry Practices that ensure food safety and quality; 3) introduce and scale-up Good Manufacturing Practices (GMP) and Good Hygienic Practices (GHP), including adherence to HACCP compliance; and 4) enhance food safety education, consumer awareness and food safety networks

7.1.4 Progress towards achievements of programme V.1

Table 25 – Programme V.1: Progress towards achievement of programme V.1

CIP2 output proxy indicators	2015/16 Baseline	2017/18	2018/19	2019/20	2020/21	Source
Farmers trained on use of organic fertiliser, green fertiliser and microbial fertiliser, in thousands	800	1,432	1,872	975	4,210	MoA APA Indicator 3.3.1, DAE
Number of food safety management system certificates awarded by BSTI	5	10	18	6	8	BSTI, MoI BAB
Number of processed food items standardised by BSTI (mandatory certification)	58	72 R	72	72	80	BSTI, MoI, BFSA, IPH
Identified number of violations of food safety standard under FSA 2013 reported by BFSA	76	31	69	137	162	BFSA
Number of HACCP/FSMS certified institutions	10	70	80	98	106	MoI, BAB, BSTI, BARC, IPH
Number of courses delivered on GAP, GHP and GMP	GAP:1 GHP/GMP:1	GAP: 1 GHP/GMP: 11	GAP: 3 GHP: 6 GMP: 2	GAP:0 GHP:0 GMP:0	GAP:0 GHP:0 GMP:0	MoA, MoI, BFSA
Number of trainees that have benefited from training on GAP, GHP and GMP	GAP: 50 GHP/GMP: 50	GAP: 45 GHP/GMP: 437	GAP: 60 GHP: 120 GMP: 40	GAP:0 GHP:0 GMP:0	GAP:0 GHP:0 GMP:0	MoA, MoI, BFSA
Number of food safety initiatives /days observed	0	1	2	2	2	BFSA, IPH

R: This figure has been revised by BSTI from 74 in MR 19.

Training on effective use of organic fertiliser, green fertiliser and microbial fertiliser was increased

The excessive use of chemical fertilisers contaminates agricultural products and degrades soil quality and fertility. To avoid the prospective risk of exposure to harmful chemical contaminants, consumers are increasingly turning to organic and chemical residue-free foods. Farmers' training on the use of organic fertilisers can enhancement the availability of organic food in the market. The steady rise in the numbers of farmers trained from 2015/16 to 2020/21 is encouraging. In 2020/21, 4,210 thousand farmers were trained in use of organic, green and microbial fertilisers which is almost 331% higher than the year of 2019/20. There were possible farmers training on use of organic fertilizer due to a very good activities of agriculture extension workers. Organic fertiliser production and supply is growing as the number and production of organic fertiliser manufacturing units rises. This has led to an increased collection of domestic kitchen waste, vegetable and food waste in urban areas. Organic fertilisers have the advantage of reducing the need - therefore cost of- irrigation for farmers because they hold water thanks to their organic matter content. They can help restore the soil fertility and quality lost due to the application of excessive chemical fertiliser. The use of organic and non-chemical pesticides and insecticides to control pests is also being encouraged: farmers are being trained to use pheromone trap technology for pest control instead of chemical insecticides which not only leads to healthier produce but is much more cost-effective.

Awards of food safety management certifications decreased

The number of food safety management certificates awarded by BSTI between 2019/20 and 2020/21, which is higher than the baseline year. The certification confirms the capacities of food producers and manufacturers to comply with the food safety standards set by the authority in their management and quality issue. Initiatives have been taken by several UN and Global Trade Promotion bodies including FAO, the World Trade Organization (WTO) and the United Nations Industrial Development Organization (UNIDO) to strengthen the capacity of Bangladesh Accreditation Board (BAB) to provide accreditation to certification and inspection agencies based on international standards (ISO 17020 and ISO 17021). The Covid pandemic situation, less organisations were taking certification from BSTI. But, food safety management system certifying organisations resulting in more certified manufacturers and producers is important for more safe production of various products and which is necessary for improving food safety management certifications.

The number of processed foods standardized by BSTI under compulsory certification increased

Following a clear drive by BSTI to increase the number of standardised processed foods under mandatory certification since the outset of the CIP2, the progress is increasing 2020/21 with the figure at 80. This is a very good sign that, the previous steady increase in the numbers of foods certified, the actual number of products covered is awfully low compared to the number of food items on the market. Product standard setting, inspection and testing facilities are the basic requirements for certification of food products, and this is BSTI's mandatory responsibility. BSTI is also involved in market surveillance activities to ensure the quality and safety of BSTI's certified products.

The number of violations of food safety standards reported by BFSA increasing

The number of violations of food safety standards reported by BFSA in 2020/21, this figure is increasing to previous year, at 162. BFSA's market surveillance activities are supported by the operation of mobile courts that identify violation of food safety rules, regulations and directives. Sales of expired and rotten food has been treated seriously as a punishable offence under the Food Safety Act 2013. Seven years into the creation of the BFSA, the authority still faces operational challenges because of sufficient number of trained food inspectors and reliable testing facilities. Without recognised laboratory analysis, penalties

for infringement of rule are not legitimate. Existing laboratory staff are inadequate and need to be trained in analytical methods and laboratory accreditation. To support this, FAO has been providing training support for laboratory staff focusing on pesticide and drug residue analysis and microbial contamination.

The number of HACCP/FSMS certified institutions continued to rising trend

Since 2015/16, the number of HACCP/FSMS certified institutes has increased. An additional eight institutes were HACCP/FSMS certified between 2019/20 and 2020/21, which is markedly higher than the previous year. A Food Safety Management System (FSMS) is a systematic approach to controlling food safety hazards within a food business to ensure that food is safe to eat. FSMS is based on the principles of HACCP, an internationally recognized system used to reduce the risk of safety hazards in food at specific points in the food preparation process. This includes biological, chemical or physical hazards. It is an essential requirement for foods to be able to be exported. Several companies, some international, are providing training on HACCP/FSMS enabling producers to show their commitment to manufacturing or trading in safe foods. Unfortunately, the products of some HACCP certified companies have been found to be of a substandard quality which weakens the credibility of regulators.[273]

No delivery of specific training on GAP, GHP and GMP but training given on different food safety

Training on good agricultural practices (GAP), good hygienic practices (GHP) and good manufacturing practices (GMP) is essential for the improvement of food safety. HACCP and personnel hygiene practices must be effectively implemented at all levels of food production and in all processing units. In order to control environmental contamination, street food handlers and distributors must be educated on appropiate practices. In 2020/21, 3593 persons taking training on different food safety issues. But in 2019/20, there was no training courses delivered on GAP, GHP and GMP due to Covid 19 pandemic situation. The MoA, officials from the quarantine section who are in charge of checking compliance with the requirements of importing countries, and field services have set up cluster groups of farmers at the district level and upazila level to create traceability and GAP, testing pesticides, there is no facility of MRL testing but this is not enough, and exports continue to be limited due to lack of compliance.

The National and World Food Safety Days were observed

Since its inception five years ago, the National Food Safety Day has been observed on 2nd of February, to coincide with the establishment date of BFSA. The 2021 theme was *"টেকসই উন্নয়ন, সমৃদ্ধ দেশ, নিরাপদ খাদ্যের বাংলাদেশ"* Need a Healthy Nation, There is no Alternative to Nutritious, Safe Food'. Concurrently, the first-ever World Food Safety Day adopted by the United Nations General Assembly in December 2018 was also observed for the first time in Bangladesh on the 7th of June, facilitated by the World Health Organization in collaboration with FAO. Through this initiative, efforts to mainstream food safety in the public agenda and reduce the burden of foodborne diseases globally are pursued. The observation of these national and international food safety days helps increase the awareness of food safety by all stakeholders of the food system and particularly by consumers who are ultimately suffer the effects of the lack of food safety.[274]

7.1.5 Policy development, programmes and initiatives underway

[273] World Bank (2019) *Food for Improved Nutrition in Bangladesh.*

[274] Indeed, according to ICDDR,B, 500 people visit a hospital because of diarrhoea every single day (Dhaka Tribune (2019) *National Food Safety Day: What the government is doing to ensure food safety.* 2 February).

Strategy on food safety included in the National Food and Nutrition Security Policy 2020

The National Food and Nutrition Security Policy 2020 dedicates a strategy (Strategy 5.1) to improving food safety, quality control, and awareness of food safety and hygiene. It emphasises the need to put in place operational standards and procedures to assure that food is free of contamination from sources such as chemicals, trace elements, heavy metals and bacteria. It plans to establish an adequate regulatory framework including surveillance for compliance and enforcement. The creation of an expanded network of duly accredited laboratories for food safety is planned. The popularisation of Good Agricultural Practices, Good Aquaculture Practices and Good Husbandry Practices that ensure food safety is envisaged for primary producers as well as the scaling up of Good Manufacturing Practices, Good Hygienic Practices, including adherence to HACCP compliance for secondary and tertiary producers. Establishment of traceability in agricultural, animal and fish production are the components of the new policy as well as the enhancement of consumer awareness on food safety.

Food Safety (Food Withdraw) Regulations 2020 introduced

The Food Safety (Food Withdrawl) Regulation was finalized and introduced in 2020 to regulate and provide guidance on withdraw of chemical contaminants and pathogens including toxic chemicals, heavy metals, pesticides, antibiotics and health risk food, substandard food, polluted food from market, supply chain and storage and consumers.

Mobile Food Safety Laboratory

A modern mobile laboratory provided by FAO with funding from USAID was launched in March 2019. It is to tour Dhaka markets to raise awareness on food safety and good food handling practices. It is also equipped to test for a range of harmful food contaminants and pathogens including toxic chemicals, heavy metals, pesticides, antibiotics, *E. coli*, *Salmonella, Shigella*, and formaldehyde. BFSA operates the laboratory for preliminary screening/test of food items, gathering data and insights about food contamination that will inform food safety campaigns. Up to three technicians will be able to perform tests simultaneously. Test results will take from just a few minutes to a few hours. Although they may not be as thorough as analyses performed in large laboratories, they will be able to promptly alert the worst cases of contamination.

Chemical testing units be installed at all land and seaports

The High Court ordered that the BFSA complies with its directives to the National Board of Revenue (NBR) to install chemical testing units at all land and seaports.

Gradation system for restaurants in full swing and updated

The international gradation system for restaurants introduced by BFSA for Dhaka city to indicate their quality based on hygiene and food safety regulation is operative even if still far from widespread. In 2020, 61 restaurants were awarded green and blue coloured stickers after scrutiny by the BFSA. Restaurants are given green, blue, yellow and orange stickers (corresponding to A+, A, B and C, respectively) based on 10 criteria: proof or certification documents, staff hygiene, approved food sources, levels of contamination, cleanliness, processing procedures and temperature control, equipment and machinery hygienic maintenance, chemical substances, pest and insect control, and drainage and pipe management. An online monitoring app ‘Najar’ is developed to monitoring the hotels and restaurants in Dhaka City. Initially it was introduced two outlet of Nababivoj and Fars hotel. It is extended and another six hotels also monitored by Najar app.

Checks on illegal use of DDT

The GoB launched a USD 42 million project funded in part by the Global Environment Facility (GEF), in partnership with FAO for pesticide risk reduction. It aims to reduce the risk posed by the largest Persistent Organic Pollutants (POP) pesticides stockpiled in the country by collecting, cleaning up and safely disposing the large stockpile of obsolete DDT. It will also develop national capacities to implement more effectively the Stockholm Convention[275] and reduce risks from pesticides, while also improving the sustainability of agricultural production and generating economic, environmental and social benefits.

Development of knowledge and capacities in the area of FSMS

In response to the Government's drive to tackle issues of food safety issues in the country, efforts are being made to train people able to understand the problem and verify compliance with regulations. For example, the Interdisciplinary Centre for Food Safety at BAU has started a new undergraduate BSc course in Food Safety Management System in partnership with FAO and the Dublin Institute of Technology (DIT) to train new generations of food safety experts. BFSA and FAO's Food Safety Project have also organised various training on basic food Safety and Risk based food inspection system.

Better control over imports

The Import Policy Order 2021-2024[276] prevents any imports of fish that contains formalin. In order to check the use of formalin in imported food, the policy includes generic and commercial tags of the formalin in the definition of formalin in its terms. Formalin is thus no longer found among imported foodstuffs.[277]

Total diet study for Bangladesh completed

The MUCH-FAO Project is commissioned a Research project named total diet study of Bangladesh: Analysis of contaminants, toxins and harmful residues in the foods and Assessment of dietary exposer to determine the population's dietary exposure to harmful chemical substances (as well as beneficial and necessary ones). This will help estimate dietary exposure to, and assess the health risks of food contaminants, allergens and extraneous materials.

7.1.6 Needs for further actions under this programme

Strengthen the capacities of the BFSA and testing laboratories

BFSA expands its activities, it still requires adequate appropriate training not only in districts but also at upazila level. More accredited testing laboratories are needed, equipped with state-of-the-art infrastructure to match international standards, including mobile laboratories which can test products in kitchen markets. A directory published by BFSA listing food testing laboratories shows that most have limited facilities that do not allow them to test all parameters. It is estimated that only 50 laboratories can test foods, and only to a limited extent. They are mostly able to identify composite elements of food but are unable to detect the presence of any external elements.[278] So far, only 10 public sectors food testing laboratories have received accreditation from National and International Accreditation bodies and 123 parameters has designated. Accreditation must be sought separately for the laboratory infrastructure, the

[275] The Stockholm Convention on POPs is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment. This Convention's signatories agree to phase out of several persistent pesticides and other chemicals, through appropriate measures to mitigate the existing risks.

[276] GoB (2019) *Import Policy Order 2021-2024*. Ministry of Commerce.

[277] Dhaka Tribune (2019) *National Food Safety Day: What the government is doing to ensure food safety.* 2 February.

[278] Hossain, E. (2019) *Food testing labs test hardly any food in Bangladesh.* New Age. 12 January.

machinery used, their operators and each of the tests carried out. The facilities and capacities of food testing laboratories should be systematically assessed. Their jurisdiction also needs to be defined considering their analytical scope and expertise.

Continue educating and raising awareness on food safety

Formal education on food safety management system (fsms) to produce competent graduates working in the field of food inspection, control, assurance, audit and surveillance services is an urgent need. It will ensure food safety control, compliance and assurance in all aspects of food production, handling preparation, processing and distribution activities. Food safety and management training needs to be expanded to more institutes/agency to cater to the demand for country-wide food safety inspection and control. Improving food safety also needs more involvement from policymakers, national and local leaders to create awareness and encourage the culture of food safety.

Continue promoting the demand for and supply of organic fertilisers and develop and apply standards for organic produce

The demand for organic fertilisers and sensitization of farmers about its advantage must continue to be encouraged. Concurrently, the supply of such fertilisers must be encouraged as the number of producing companies is limited and mostly inadequate in terms of quality standards. To encourage the production and promotion of organic fertilisers, subsidies on chemical fertilisers may need to be rethought, given the high cost of importing them.[279] With the increase in consumer awareness about food safety and health the demand for organic food is growing. Policy level support is required for farmers who want to start or expand their production of organic produce. Simultaneously, standards for organic food should also be developed and endorsed since there is evidence of non-organic foods being sold in the market as organic food, with limited means for consumers to check.

Implement existing laws

At present, Bangladesh has a high number (15) of acts, laws, and regulations of various categories of food products which creates overlapping and complexity in application and enforcement[280]. The Food Safety Act 2013 imposes seven-year imprisonment and a BDT 10 lakh fine for the adulteration of food with life-threatening chemicals. The Special Powers Act 1974 goes as far as imposing a maximum punishment of death penalty for such offences.[281] Yet, offences continue to abound. To improve the situation the existing laws thus need to be strictly imposed and monitored.

Develop certification to enable exports

The fisheries sector is one of the most productive and dynamic industries in Bangladesh. It has the potential to improve food security and influence the development of an agrarian economy. However, due to the lack of responsible farming and proper food safety and quality standards, there has been a decline in the export of its aquaculture products. For example, the Aquaculture Stewardship Council (ASC) accreditation is increasingly becoming necessary to get farmed species into European retail. Efforts have been made on the production side in terms of traceability, quality and getting a regulatory platform in place but this still falls short of what is required. So far, no single Bangladeshi farm has received this accreditation and the limited size of farms in an important impediment to such certification. The inability

[279] UNDP (2019) *Recycling value chain analysis (RVCA) in Teknaf and Ukhia.* Bangladesh Sustainable Solutions to Solid Waste Project.
[280] USDA (2019) Bangladesh- Food and Agricultural Import Regulations and Standards Report- FAIRS Annual Country Report. *GAIN Report*. Number: BG 1812.
[281] Dhaka Tribune (2019) *There's something wrong with the food.* 17 May.

to ensure full traceability and adherence to social-environmental standards has meant that some countries stopped sourcing shrimp from Bangladesh.[282]

Execute existing antibiotics poultry feed ban

Antibiotics are still found in poultry feed although their use is banned in Bangladesh. Traders continue to break the law to ensure low mortality and good growth of chickens even if this poses serious public health hazards, mostly by creating antibiotic resistance in humans. This is alarming given that an overwhelming majority of deaths in intensive care units of the country can be attributed to antimicrobial-resistant superbugs.[283] Efforts must be made to implement the existing ban on the use of antibiotics in poultry feed.

Enhance the results of waste management improvement efforts

Inadequate management of waste can pose significant risks to food safety. Water streams can be contaminated with pharmaceutical contamination from residential, industrial and agricultural waste streams (e.g. antibiotics used in agriculture and aquaculture). Landfill leachate may leak into surrounding soils affecting agriculture. Certain substances detrimental to human health if ingested such as plastic additives (such as phthalates and bisphenol A (BPA)) are now making their way into surface water systems and even drinking water supplies thus entering the food chain.[284] Thus, initiatives to render waste management more effective continue in the two city corporations under Greater Dhaka but show limited results. In 2016, approximately 6,000 waste bins were installed but their use was limited. Despite the creation of designated spots for waste disposal, illegal dumping continues which creates water clogging when it rains. Efforts continue however and the allocated budget specific to waste management for Dhaka North City Corporation for the fiscal year 2020-2021 increased than the previous year.

Accelerate waste disaggregation and sensitise the general population to the 3R concept

The Dhaka North City Corporation reported a 22% rise in the amount of waste generated in 2017/18 from the previous year, accounting to 0.8 tonnes of waste. The Dhaka South City Corporation generated one million tonnes of waste. Economic development, population growth and the increase in the numbers of shopping malls, shops, restaurants etc. explain the rises observed. Options to acquire more land for landfills but also to create sorting plants are being looked into but this needs to be accelerated.[285] Waste Concern is currently replicating its Integrated Resource Recovery Centres (IRRCs) model across the country through the Department of Environment and the Ministry of Environment, Forest and Climate Change (MoEFCC). These centres transform municipal waste into resources such as compost, biogas, clean water, recyclable materials that can be sold in the market and biodiesel. While measures are gradually being taken to accelerate waste segregation, this needs to be expanded and accelerated, while the general public is sensitized to the 3R concept of reducing (consumption), recycling and reusing.

Develop policy guidelines and sellers' registration for safe and healthy street food vending

Cheap and readily available street foods are a non-negligible source of food for Bangladeshi consumers. But the environment in which these street foods are prepared, handled, catered, preserved and disposed is unsatisfactory and often highly unhygienic. The washing and drinking water used and served to customers is often unsafe as running water is frequently not readily available. Vendors are often illiterate

[282] Holland, J. (2019) *Bangladesh seeks more buck for its 'bagda*. Global Aquaculture Alliance.
[283] The Telegraph (2019) *Superbugs linked to eight out of 10 deaths in Bangladeshi ICUs*. 22 April.
[284] Yu-Chen, A., Tzy-Ying Huang, L. & Wahlqvist. M.L. (2009) *Waste management to improve food safety and security for health advancement.* *Asia Pacific Journal of Clinical Nutrition* 18(4):538-45.
[285] Daily Star (2019) *Time to be WARY OF WASTE*. 21 April.

and unaware of nutrition and food hygiene facts.[286] Policy guidelines for street food vending were developed by the Consumers Association of Bangladesh (CAB) in 2010 to assure the safety and quality of street food. Following this, in order to institutionalize street food vending, FAO has undertaken a number of initiatives, including a pilot study in Khulna where street food carts were distributed along with utensils, clean water jars and food preparation. This was accompanied by training to the vendors on the maintenance of personal hygiene, preparation and servicing of safe foods to the consumers. Khulna became a model for street food vending that also provided a livelihood for both women and males. In 2018, FAO provided the Barisal City Corporation and Dinajpur Municipality a total of 258 street food carts to whom the local government authorities provided an informal registration number with a plan to formalise and extend this to other food vendors at a later stage. Notwithstanding these initiatives, the street food vending sector remains disorganized and needs an improved policy and regulatory system to govern it. The CAB guidelines need to finalised, implemented with a robust monitoring system in place.

[286] Nizame, F.A., Alam, M.U., Masud, A.A., Shoab, A.K., Opel, A., Islam, M.K., Luby, S.P. & Unicomb, L. (2019) *Hygiene in Restaurants and among Street Food Vendors in Bangladesh*. *Am J Trop Med Hyg.* 101(3): 566-575.

8.2. Programme V.2. Reduced food losses and waste

The objective of this programme is that food loss and waste (FLW) are minimised throughout the production chain down to consumption by households. It comprises three sub-programmes which reflect different levels of the food value chain, and the programmes include: to improve methods of estimating food loss and implement appropriate measures to minimise food loss including the nutrient loss at different postharvest steps; to strengthen capacity in postharvest technology and infrastructure (transport, packaging, storage); and to reduce food waste at the retail and household consumption levels.

8.2.1 Progress towards achievements

Table 26 – Programme V.2: Outputs indicators and progress against baseline

Proxy indicators	Baseline (2015/16)	2017/18	2018/19	2019/20	2020/21	Source
Wastage as a proportion of agricultural produce, including sector specific proportions in Bangladesh	*	*	*	*	*	MoFood, MoA, MoFL, MoI

* Not available

Recent information on food loss and waste is not yet available in Bangladesh

Recent information on FLW is not yet available in Bangladesh (Table 26). Although levels of postharvest losses of specific food commodities have been estimated over the years, there are no recent nationally representative data generated through an approved or widely recognized methodology on the magnitude of FLW in Bangladesh. FAO (2019)[287] recorded all FLW estimates for Bangladesh from grey literature to national and sectoral reports between 2000 and 2017. It identified 89 studies: the average FLW rate was 7.4% with a wide variation from a minimum of 0.5% to 35%. Such range provides little guidance as to what a realistic figure might be. More recently, an IFPRI study under the MFSP assessing current grain losses showed a storage loss of less than 1% during the 12-month period, which meets the standard set by the government. However, this study only considered storage losses and did not cover other sources of losses in the rice supply chain. Champions 12.3 (2017)[288] have shown that in South Asia, food losses are mostly prevalent near production, handling and storage, and less at the consumption level. The estimated share of total food that is lost or wasted is 17% in the region compared to 42% in North America and Oceania. While the focus should, therefore, be on the lower end of the value chain, as value chains transform, waste associated with consumption and distribution will likely increase.

Food loss during consumption and food waste is a major concern of Bangladesh. A recent study shows that food waste is now around 5.5 per cent in the rural areas; 3 per cent during procurement and preparation stages, 1.4 per cent during serving, and 1.1 per cent at the plates. Further, nearly 10 per cent of the crops are lost during post-harvest operations. Dealing with waste management is a major problem as the country struggles to manage municipal solid wastes, industrial wastes and with air pollution in the cities. Bangladesh has begun to work on smart-cities and take several initiatives both at the public and private levels. The Johore city has recently developed the first integrated landfill and resource recovery facility in Bangladesh under which it is recycling daily city wastes into biogas, electricity and fertilisers. The Sylhet City Corporation has also promoted the green city concept and recycling of wastes into fertiliser using citizen's initiative (SDG Progress Report 2020)

[287] FAO (2019) *The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction*. Rome.
[288] Champions 12.3 (2017) *SDG Target 12.3 on food loss and waste: 2017 Progress Report*. *An annual update on behalf of Champions 12.3.*

8.2.2 Policy development, programmes and initiatives underway

Food loss and waste addressed in policies and activities started towards the design of a national loss reduction strategy

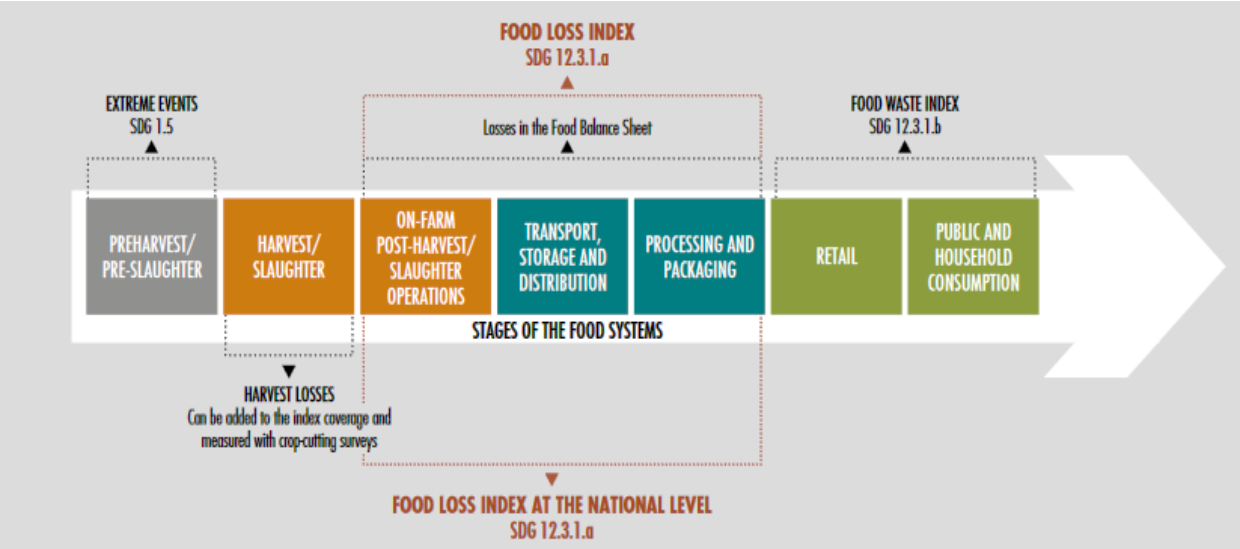
On the aims of the National Agriculture Policy 2018[289] is to make agriculture safe and profitable, with emphasis on the reduction of postharvest loss, enhancement of agro-processing activities and extension of postharvest technology to end-users. The Export Policy 2021-2024[290] was also published with clear directions on the adoption of good practices to produce and export safe food. Consultations on the progress of achievement of SDG Goal 12 were to be held in early 2020 in view of preparing a report for the Office of the Honourable Prime Minister on the reduction of FLW and the need for a national loss reduction strategy. The MoFood is responsible for the monitoring of FLW at the national level, while the MoA is the co-lead and the MoFL, Ministry of Commerce, MoI and the Statistics and Information Division under BBS are associated partners.

Assessment of food loss and waste for selected food commodities is being initiated

The Food Loss Index (FLI) and Food Waste Index (FWI) are the two indicators to be used to monitor SDG 12.3.1. Methodology for the calculation of FWI is still under preparation. FLI is a synthetic fixed-base index that compares percentage losses of a country for 10 key commodities from five food groups. In Bangladesh, the evidence on the extent of FLW is scattered and inadequate, thus rendering a national strategy to handle the problem challenging to develop. To improve global, regional and local knowledge about the underlying reasons for food losses and to assess where critical loss points occur, FAO has undertaken a series of case studies for example in India on the value chains of three essential commodities: rice[291], chickpea[292] and mango[293]. The findings are to be used to develop technically, economically, environmentally and socially feasible solutions to reduce food losses. These, however, use a field case study methodology and do not constitute a state or national subsector study. Thus, in the State of Food and Agriculture Report (2019)[294] dedicated to this issue, FAO proposes to measure progress towards SDG Target 12.3 through two separate indices: the Food Loss Index (FLI) and the Food Waste Index (FWI) (see Figure 26). In the year under review, under the FAO-MUCH Project which assists the GoB in strengthening its capacities to design and monitor information-based food and nutrition security policies and investment plans, a research project was being developed to assess the magnitude of food losses for selected food commodities chosen from all food groups (cereals, fruits and vegetables, roots and tubers, poultry and livestock and fish). The FAO-MUCH Project will also attempt to assess food waste at the retail level, restaurant outlets and catering house in sampled areas of Bangladesh.

[289] GoB (2018) *National Agriculture Policy (NAP) 2018*. Ministry of Agriculture.
[290] GoB (2021) *Export Policy 2021-2024.* Ministry of Commerce.
[291] FAO (2018) *Food loss analysis: causes and solutions - Case study on the rice value chain in the Republic of India*. Rome.
[292] FAO (2018) *Food loss analysis: causes and solutions - Case study on the chickpea value chain in the Republic of India*. Rome.
[293] FAO (2018) *Food loss analysis: causes and solutions - Case study on the mango value chain in the Republic of India*. Rome.
[294] FAO (2019) *The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction*. Rome.

Figure 23 - Scope of the estimation of food loss index in food value chain



Source. FAO (2019) The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction. Rome.

Collaborations established

National and international collaborations are required to monitor the FLI and take measures to reduce FLW. To this effect, a ministry-level memorandum of understanding was planned for 2020 between Bangladesh Agricultural Research Council (BARC) and the Global Initiative for Food Security (GIFS) of the Saskatchewan University, Canada with a component related postharvest and value addition. Dhaka Food System, a FAO project funded by Wageningen University and Research (WUR) of the Netherlands was implemented with a particular focus on food waste. A knowledge transfer mechanism with the Indian Team of FLW for the baseline study and computation of the FLI is also being explored.

Projects incorporating the issue of FLW in their objectives undertaken

In Bangladesh, several projects are starting to incorporate the reduction of FLW in their objectives, especially in the crop sector. For instance, the 190.86 million USD Smallholder Agricultural Competitiveness Project (SACP) implemented by DAE with partner organisations (DAM, BADC and BARI) has a component on the reduction of food loss through improved postharvest handling and processing practices.[295] In this project, the contributions of GoB, private sector and beneficiaries are 26%, 7.4% and 6%, respectively. Another remarkable success has been achieved through establishment of a Village Super Market (VSM) in Khulna with support from Solidaridad, and INGO. The VSMs possess the improved postharvest handling facilities such as cold storage units, freezing and ice facilities which will significantly reduce post-harvest food waste and losses.

8.2.3. Needs for further actions under this programme

Develop a national strategy on the reduction of FLW starting with its quantification

There is an urgent need for investments by both the public and private sectors in critical areas of the food supply chain such as storage, transportation, food processing and packaging industries which will contribute to the reduction of FLW. A national strategy and action plan on the reduction of FLW including the establishment of food banks is thus needed to direct such investments where the gaps and needs are.

[295] IFAD (2018) *Smallholder Agricultural Competitiveness Programme- Final Project Design Report*. Asia and the Pacific Division. Programme Management Department. IFAD. 186.

Such national FLW reduction strategy has been developed by Canada[296] and the European Union.[297] Awareness on the needs and ways to reduce FLW across traditional and modern food value chains is essential and guidance is needed for all actors involved. Adequately quantifying FLW across the food system is a prerequisite to the development of this strategy.

Encourage adoption of good practices to reduce losses and maintain quality and safety

Improvements in on-farm operations through technological interventions and adoption of good practices and infrastructure development for pre-harvest care can help avoid damage and contamination and therefore reduce FLW. Post-harvest management, adequate on-farm primary processing to prepare raw materials for secondary and tertiary processing are also crucial. Good Agricultural Practices (GAP) and Good Aquaculture Practices (GAqP) need to be strengthened by looking into the harvest index[298], timing of harvest, the choice of harvesting technologies, and using appropriate farm-level storages. In Bangladesh, GAP are being developed, where BARC is the Scheme Owner, DAE the certification body and BAB the accreditation body although they are yet to issue certificates. Export of agricultural commodities and food items need to be expanded whereby the surplus production can be exported to neighbouring countries. However, assurance of quality and safety of agricultural produce is a prerequisite for export which can be achieved through the application of GAP.

Develop, invest and apply appropriate technologies to reduce FLW

Modernising public warehouses, expanding cold storage and developing integrated transportation cold chains are urgent to reduce FLW. Simple innovations such as replacing sacks by plastic crates can reduce losses in tomatoes and other crops. In the Philippines, rice-storage bags reduced losses by 15 percent. Yet, Hortex Foundation under the Ministry of Agriculture has a very limited number of refrigerated trucks (3 tons capacity; 15 to -25°C temperature range) that are rented to users to carry fresh commodities.[299] Modernization of domestic slaughterhouses and live birds or fish markets is needed for reducing loss and also for assuring food safety and to ensure the supply of hygienic finished meat and meat products. Ensuring appropriate slaughter waste management also contributes to reducing the environmental pollution. For perishable horticultural commodities, controlled atmosphere storage, modified atmosphere storage, heat treatments (hot water, hot air, irradiation), use of ethylene scrubbers and ethylene inhibiting compounds, postharvest fungicides, sanitizers such as electrolyzed oxidizing water, biotechnological tools need to be expanded to prolong storage life and reduce losses. In West Africa, the use of solar dryers to extend the shelf life of fruits and tubers is showing promise in reducing postharvest losses. Packaging techniques such as vacuum packing, nitrogen flushing also help preserve the freshness of food for longer periods. Modern packaging and improved ripening technology for the horticultural commodities are thus also urgently needed.

Increase food processing capacity

Food processing plays an important role in tackling FLW. This includes minimal processing as well as secondary (the conversion of ingredients into edible products) and tertiary processing (the production of prepared convenience foods).

[296] National Zero Waste Council (2018) A *Food Loss and Waste Strategy for Canada.*
[297] European Union (2019) *National Strategy for Food Waste Reduction*. Federal Ministry of Food and Agriculture. Berlin.
[298] Proportion of the crop biomass harvested for food.
[299] Hortex Foundation (2013) Reefer Truck Available on Rent at Hortex Foundation. *Hortex Newsletter* 13(1).

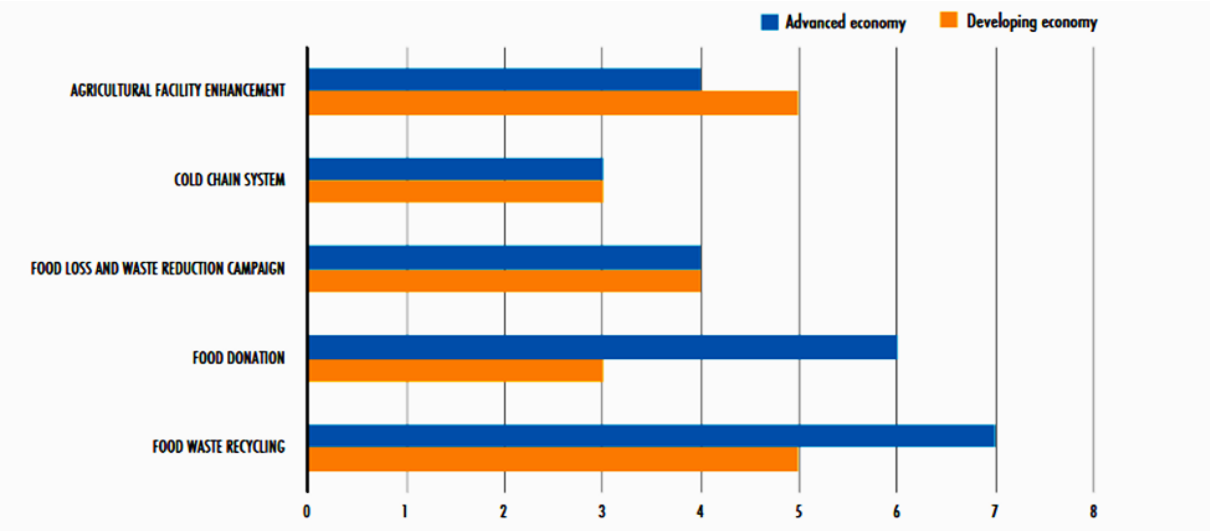
Create an environment that promotes FLW reduction

An adequate policy environment to promote technologies for smallholders and increased storage facilities and cold chain systems is needed. Provisions for sufficient electricity, water, transport systems, communication technology and standards to support the development of post-harvest systems in food supply chains must be provided. Smallholder organisations and supply chain stakeholders must be assisted when accessing finance, for example through credit schemes that have been designed to support the acquisition of post-harvest technologies such as plastic crates for bulk packaging, harvesting tools, hot water treatment tanks to eliminate pests and diseases. Campaigns to promote the economic, social (including nutritional) and environmental benefits of reducing post-harvest losses in fruit and vegetable supply chains should be supported. The establishment/operationalisation of an efficient communication and trade environment is also a prerequisite for implementing FLW reduction measures. Overall, private sector incentives are needed since sometimes the measures needed to minimize FLW are not cost-effective as they require costly quality control and technologies.

Encourage public and private sector initiatives as well as PPPs for the reduction of FLW

Tackling the issue of loss and waste entails costs which suppliers and consumers will only be willing to bear if these are outweighed by the benefits.[300] These are often associated with the need to develop or improve the quality of certain public goods and services which private actors are not willing to fully fund. This is where public–private partnerships (PPPs) can play a role.[301] PPPs interventions towards FLW reduction in Asia-Pacific economies are most common for food waste recycling, and also for agricultural facility management for the developing economies of this region. For developed economies, food donations interventions are the second most common initiative. The most important feature of PPPs according to Asia-Pacific Economic Cooperation (APEC) members, is knowledge sharing and improved policy and project performance. Bangladesh needs to investigate in which areas such partnerships could be most effective.

Figure 24 - Types of interventions towards food loss and waste reduction by public-private partnerships in APEC countries (number of partnerships)



Source. FAO (2019) The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction. Rome.

[300] FAO (2019) *The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction*. Rome.
[301] *Ibid.*

Develop postharvest systems through skilled human resources and equipped institution

Skills and practices in the generation and application of appropriate loss reducing technologies need to be strengthened. Boosting capacities of farmers and stakeholders in the supply chain and developing capacities within extension systems to address quality management, safety assurance and loss reduction in food supply chains, is crucial. The capacity of local small and medium-sized enterprises (SMEs) that engage in the manufacture of postharvest technologies for local markets needs to be encouraged. Support is also needed to provide access to improved technologies and practices to smallholders. The Smallholder Agricultural Competitiveness Programme (SACP) for example is supporting smallholder growers and stakeholders in capacity development in postharvest management and processing of high-value crops in Bangladesh.[302] The establishment of national and regional networks for information and technology exchange on postharvest systems development also needs to be promoted.

Build the capacity of educational and research institutions

Capacity building of the relevant educational institutions and research organisations with modernized curricula for postharvest management and cutting-edge research facilities is crucial. FLW reduction is technical and hence requires technically trained persons to address the issue. For instance, Bangladesh requires additional experts on post-harvest management of perishables, food technology, food safety management, food science and nutrition to strengthen leadership in the agriculture sector and food industries. Effective partnerships among academia even internationally[303] private sector and Government need to be strengthened to generate and use research evidence on reducing FLW.

Stimulate education and awareness

Knowledge, education and awareness are needed to reduce FLW. To this effect, national and international best practices should be drawn upon to devise appropriate interventions. Awareness building for the numerous stakeholders of the food system including public sector agents and private sector industry fora/associations is important to make a difference. At household level, wise food purchase and storage, standardisation of cooking and serving sizes, portion control, along with nutrition education can help minimise food waste.

Adopt and adapt practices and innovations from across the globe to reduce waste

Appropriate mechanisms for waste distribution/disposal (e.g. for cattle feeding, fish feeding and landfilling) by separating different types of waste must be adopted, adapting it to the needs of urban and rural areas. Information technology can be useful for the redistribution and marketing of food and waste, build awareness and responsible behaviour. Food waste can be minimized at the individual level through a number of actions such as careful storage of foods; donation of accumulated food; freezing of food; use of old fruits and vegetables to create fruit salads or smoothies; and eating leftovers.[304] The government and the private sector can also contribute to reducing waste through initiatives such as the redistribution of food items to the needy at a lower price and the marketing of rescued food. Examples of systems to recover food to avoid it being wasted, especially in developed countries may be adopted or adapted to Bangladesh: in the Netherlands, ResQ-club allows surplus food from restaurants to be bought online and De Verspillingsfabriek sells soup made from rescued unsaleable fruits and vegetables. A mobile phone

[302] IFAD (2018) *Smallholder Agricultural Competitiveness Programme- Final Project Design Report*. Asia and the Pacific Division. Programme Management Department. 186.

[303] Partnerships with institutions such as the Postharvest Technology Centre of the University of California, Davis, recognized for its contribution in developing postharvest technology of perishables to maintain quality and safety and to reduce postharvest loss would be beneficial for Bangladesh.

[304] Farmveda (2019) *Food Wastage in India.*

application first developed in the UK but now extended to many countries, Too Good To Go , offers food that restaurants and shops cannot sell at the end before closure and destined to be thrown, at discounted prices. In France, a law against food waste forces major supermarkets to donate their unsold items to charities that will distribute it. Similarly, in Canada, unused food is recovered from manufacturers, retailers, restaurants and 22,000 people in need are fed daily. Sweden converts 50% of its household waste of 4.4 million tons into energy.[305]

[305] Goswami, A. (2018) Food wastage crisis in India. *Clean India Journal*.

8.3. Programme V.3. Improved information and data for evidence-based monitoring and adjustment of policies and programmes

Programme V.3 aims to support FNS-related decision-making, policy formulation and programming with an evidence-based, timely, data-driven analysis that relies on the existing network of information systems. This is done by improving information infrastructures and enhancing coordination in data collection and exchange.

8.3.1. Progress towards achievements

Table 27 – Programme V.3: Outputs indicators and progress against baseline

Proxy indicators	Baseline (2015/16)	2017/18	2018/19	2019/20	2020/21	Source
Existing food security and nutrition databases/ surveillance systems	FSNIS, FSNSP[306], BDHS[307]	NIPU Database, NIS, BDHS, FSNIS	FSNIS, NIPU Database, NIPN, BDHS, IPC	FSNIS, NIPU Database, NIPN, BDHS, IPC	FSNIS, NIPU Database, NIPN, BDHS, IPC	FPMU
Food Composition Tables (FCT) updated / disseminated	BIRTAN started training on Bangla version; Research on FCT completed and operational	BIRTAN has started dissemination through its Training for Trainers	BIRTAN, BIRDEM, INFS and FPMU are disseminating the FCTs through various means	BIRTAN, BIRDEM, INFS and FPMU are disseminating the FCTs through various means	BIRTAN, BIRDEM, INFS and FPMU are disseminating the FCTs through various means	INFS/ CARS/ DU/ FPMU/ BIRTAN

Different FNS data sources continue to inform policymaking

A variety of government and non-government FNS surveys and surveillance systems continue to inform policy analysts and policymakers thus contributing to shaping nutrition-sensitive policies and programmes and providing updates on coverage and effectiveness of nutrition-specific interventions. BDHS is the main reference to track progress on maternal, child health status, child nutrition and feeding practices at the country level. BDHS 2017-18 collected data between October 2017 and March 2018 and its key indicator report was published in November 2019.[308] In addition, the Household Income Expenditure Survey (HIES) which last took place in 2016 is a national representative survey measuring monetary poverty, the standard of living and nutritional status up to district level. The Bangladesh Integrated Household Survey (BIHS), conducted by IFPRI in 2011/12, 2015 and 2018/19, is the only nationally representative survey of rural Bangladesh to collect data on dietary intake of individual household members and anthropometric measurement and women's empowerment through the Women's Empowerment Index (WEAI). The Health Facility Survey (BHFS, 2017) implemented by the National Institute of Population Research and Training (NIPORT) includes reporting on health care service, facilities and nutrition services. The Nutrition Information and Planning Unit (NIPU), established in IPHN, tracks the implementation of NNS services at the district level. It brings together local-level nutrition data collected from different sources such as Community Clinics, Upazila Health Complexes through the DHIS2 portal. In April 2019, the National Information Platform for Nutrition (NIPN) was officially launched by the MoFood and the European Union. It provides support to the country's strategic decisions by strengthening nutrition-related information systems and improving data analysis. Finally, the information gathered by the Integrated Food Security

[306] Food Security and Nutritional Surveillance Project.
[307] Bangladesh Demographic and Health Survey.
[308] GoB (2019) *Bangladesh Demographic and Health Survey 2017-18 – Key Indicators*. Ministry of Health and Family Welfare.

Phase Classification (IPC) Chronic Food Insecurity analysis covers a total of 28 districts and is valid until 2020 in the absence of any structural changes.

Ongoing trainings on the Food Composition Tables expanded

Since the finalisation of the Bangladesh FCTs in June 2013, their further updates[309] and translation into Bangla, their dissemination has been ongoing through capacity building organised by BIRTAN, the MUCH project and INFS. In the year under review, BIRDEM has been disseminating FCTs through its various capacity development training programmes including dieticians' training courses. Besides, FPMU, with technical support from MUCH, developed nutrient-dense recipes using the FCTs and disseminated them in nutrition awareness events such as the Nutrition Olympiad and World Food Day. FPMU also disseminated the FCTs in these events to create mass awareness in food choices on the nutritive value of local foods and their use.

8.3.2. Policy development, programmes and initiatives underway

At 145.8 million USD, this programme continues to be among the smallest ones of the CIP2 (0.8% of the total budget). 59% of the funding, both for already financed and pipeline projects, comes from DPs. The ongoing BBS/World Bank National Household Database (NHD) project alone accounts for 54% of this programme's budget. The ongoing BBS Agriculture (Crops, Fisheries & Livestock) Census-2018 project is worth 28% of the total. The pipeline, 10% of the total budget, includes seven projects, compared to two in the last reporting period, which could be interpreted as a sign of a heightened understanding of the need to improve information and data for evidence-based monitoring and adjustment of policies and programmes. Furthermore, the budget planned beyond the life of the CIP2 is 49 million USD which is also substantial compared to the current total budget of this programme.

National Strategy for the Development of Statistics in the process of being implemented

Signed in June 2018, the National Strategy for Development of Statistics (NSDS) Implementation Support Project became operational in September 2018 and effective in April 2019. The project aims to improve the capacity of BBS to produce quality statistics and make them timely accessible, thereby contributing to realizing the NSDS.[310] The project is operational at three levels: first, to improve the enabling environment by updating statistical legislation, policies and institutional arrangements; second, to strengthen BBS management systems, by improving human and ICT resources, and the statistical infrastructure; third, to strengthen user-producer dialogue so that statistics are used, and users' feedback is incorporated in the production cycle. The project expected outcome is enhanced coverage and improved collection and quality of data for core statistics, including, national accounts and statistics on price, labour, industry, social sectors, and agriculture, as well as gender-disaggregated data when possible.

[309] For more information on the FCTs, see Programme III.1.

[310] World Bank (2018) *Restructuring paper on a proposed project restructuring of National Strategy for Development of Statistics Implementation Support*. Report RES40528. March.

SDG Tracker further improved and first SDG progress report published

The SDG Tracker developed by the Access to Information (a2i) Programme of the Prime Minister's Office was further developed and enhanced. This web-based searchable information repository enables tracking of Bangladesh's progress towards attainment of SDGs and other national development goals. It provides updates on the implementation status of the goals along with different options for data visualization. It also displays the tier classification of indicators (Figure 28) which flags remaining gaps in data needs. Based on this, the 'Sustainable Development Goals: Bangladesh Progress Report 2018'[311] was published in December 2018. This is the first formal report on the national SDG implementation progress.

Figure 25 – Tier Classification for SDG Tracker by A2i

Tier I : Indicator is conceptually clear, has an internationally established methodology and standards are available, and data are regularly produced by countries for at least 50 percent of countries	115
Tier II : Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.	95
Tier I/II : Multiple tier indicators meaning Indicator whose different components are classified into different tiers	2
Pending : Indicator's data availability is pending for review	19

NPAN2 M&E Report prepared and disseminated

The BNNC published the Monitoring Report 2016/2017 & 2017/2018 for the Second National Plan of Action for Nutrition in 2018. This exercise details the implementation progress towards the NPAN2 2016-2025. There are strong linkages between NPAN2 and the CIP2, which have common objectives and involve the same sectors and stakeholders. Both are in alignment with the SDGs and other international initiatives such as the ICN2 Framework for Action, the UN Decade of Action on Nutrition and the SUN movement and is fully coherent with the national priorities as set in the 7FYP. Hence, actions are being taken to ensure complementarity and synergy in the implementation and monitoring of these two policy action plans. The CIP2 monitoring process enhances the capacity of multiple sectors of the government to collect and use the SMART indicators for national nutrition targets included in the common result framework for monitoring the progress of the CIP2 and NPAN2. The FNS data collected from multiple sectors for MR19 were used to write up the NPAN2 Monitoring Report 2016/17 and 2017/18 section in Chapter 3 entitled 'Thematic Area 2: Agriculture & Diet diversification and locally adapted recipes'. The contribution from the CIP2 monitoring process to the NPAN2 one will continue henceforth.

Publication of the public expenditure review on nutrition

In March 2019, the Oxford Policy Management published the Bangladesh Public Expenditure Review on Nutrition as part of an intervention under Strengthening the capacity of Child-Focused Budgeting Project being implemented by the Finance Division. It analyses the level and composition of public expenditure in nutrition over 2014/15 – 2016/17 and for the 2020/21 Budget; it provides a baseline to effectively monitor progress towards the achievement of the nationally set goals for nutrition; and it assesses the institutional mechanisms for the management of public finances for nutrition. While there are currently no plans to hold any other such expenditure review, this endeavour will guide actions to improve nutrition expenditure, both in terms of allocation and execution.

[311] GoB (2018) *Sustainable Development Goals: Bangladesh First Progress Report 2018*. Bangladesh Planning Commission, Ministry of Planning.

Scaling out of BNNC's activities at the local level

BNNC formed District Nutrition Coordination Committees (DNCC) and Upazila Nutrition Coordination Committees (UNCC) to act as a multisectoral nutrition coordination platform at the sub-national level. Members of these committees are to work together for nutrition planning, implementation, monitoring and evaluation at the district and upazila level. An operational guideline has been formulated to describe the role and responsibilities of DNCC and UNCC members to scale out the interventions to implement the NPAN2. BNNC developed a multisectoral minimum nutrition service package to prioritise specific and sensitive nutrition interventions aligned with NPAN2 to meet the demands of different areas thus ensuring that no one is left behind. It will focus on developing high impact and low-cost interventions by multiple sectors including health and population, agriculture, fisheries and livestock, DPHE-WASH, social protection, education, social welfare, MoDRM and NGOs, civil society and other local-level partners.

8.3.3. Needs for further actions under this programme

Continue efforts to produce SDG indicators' and other relevant FNS data

A data gap analysis conducted by the GoB found that out of the 232 SDG indicators, data were only readily available for 70 indicators, with a lag of up to three years for some. Another 108 indicators could be generated by modifying data from existing censuses, surveys and MIS. Often, the data are not available at the required level of disaggregation or at the required data interval (e.g. HIES is only carried out every five years). Out of the 13 SDG indicators under SDG-2, the main goal covered by the CIP2, only five are reviewed in the first progress report on SDGs.[312] The many other SDGs relevant to the CIP2 (namely SDGs 1, 3, 5, 6, 8, 9, 12, 13, 14 and 17) are also affected by the limited availability of information. Efforts thus need to be sustained to generate and compile the data needed to monitor SDGs in general and FNS in particular. Capacities notably of BBS but also of other institutions responsible for generating information need to be strengthened through sustained political will and financial commitments from the GoB and its DPs, and progress reports on the SDGs should be produced regularly to help focus efforts on filling up data gaps.

Reinforce policy uptake of evidence by policymakers

It is important that policy makers and all those contributing to defining the country's strategic direction towards FNS base their decisions on solid quality evidence. This entails strong capacities to produce such evidence but also capacities to understand and willingness to use this evidence by policymakers and leaders. In a study on capacities to apply research evidence in policymaking in the field of health in Bangladesh and three other countries[313], a number of observations which the FNS sector may learn from were made along with recommendations to address existing gaps, as shown in Table 28.

[312] *Ibid*.

[313] Hawkes, S., Aulakh, B.K., Jadeja, N., Jimenez, M., Buse, K., Anwar, I., Barge, S., Odubanjo, M.O., Shukla, A., Ghaffar, A. & Whitworth, J. (2016) Strengthening capacity to apply health research evidence in policy making: experience from four countries. *Health Policy and Planning*. Volume 31. Issue 2. March.

Table 28 - Situational assessment and strategies to address gaps in Bangladesh in the health sector

Key findings in assessment	Interventions to address gap
Researchers pursue their own interests	Increase opportunities for researchers and policymakers to meet and share ideas
Poor communication skills of researchers and research outputs not relevant	Change methods of communication—use of multimedia communications
Lack of centralized site for accessing information	Build infrastructural support for policymakers to access information; established shared hosted website for ease of research output access
Few opportunities for researchers and policymakers to meet	Establish regular meetings between researchers and policymakers
Poor capacity to interpret and use data	Training programmes for policymakers and policy influencers

Source: Adapted from Hawkes et. al, 2015[314]

Advance knowledge and reliable information on gender-related issues through sex-disaggregated data

Sex-disaggregated data and gender analysis are essential for planning process. At the production level, for example, men and women's roles in agricultural production may differ, requiring different approaches to meet their needs with regards to access to technologies, inputs and knowledge. Entry to markets is also likely to differ depending on a person's sex, especially in Bangladesh where women's participation may be conditioned by factors that may be easily overlooked because of their seemingly trivial nature, such as the availability of adequate toilets in the market place. Women's bargaining power may also be restricted compared to that of a man mostly due to cultural norms that need to be explored and understood. Differences in feeding practices between boys and girls from birth throughout childhood may be conditioned by beliefs and preferences: breastfeeding and socio-cultural practices, food taboos, cultural beliefs or caring practices may thus vary according to the gender of the child for example, even through to adolescence, calling for different measures. Delving into the differences that exist between the sexes and understanding gender dynamics is key to ensure FNS at the national level.

[314] *Ibid.*

8.4. Programme V.4. Strengthened FNS governance, capacity strengthening and leadership across FNS

8.4.1. Progress towards achievements

Table 29 – Programme V.4: Outputs indicators and progress against the baseline

CIP2 output proxy indicators	Baseline (2015/16)	2017/18	2018/19	2019/20	2020/21	Source
CIP Monitoring Reports produced	Yes	Yes	Yes	Yes	Yes	FPMU
SUN index for 'Bringing people together into a shared space for action'	54%	75%	75%	75%	75%	SUN Annual Progress Report
Right to Food issues discussed by policymakers and at Parliamentary level	No	No	No	No	No	FPMU

* Not available; R: Revised

The CIP monitoring is an established annual process

FPMU, along with 19 other Ministries and government agencies, continues to lead and coordinate the annual production of the CIP monitoring report. High-level FNS focal points across core ministries have been established and function efficiently (see Outcome V) to supply information towards and contribute to the yearly monitoring report. They participate in its development at every step of the way in workshops held on a regular basis between December and May of each year as per a Roadmap that details the entire process and assigns responsibilities.

The SUN index for 'Bringing people together into a shared space for action' remained quite high but unchanged from the previous year

Progress in the SUN index 'Bringing people together into a shared space for action' is gauged in the annual Joint assessment through five progress markers, namely 1) select/develop coordinating mechanisms at country level; 2) coordinate internally, engage with others for broader influence; 3) engage within/contribute to MSP; 4) track, report, reflect on contributions and accomplishments; and 5) sustain the political impact of the multi-stakeholder platform. By measuring the progress in this marker, the CIP2 checks the degree to which internal harmonisation and coordination have evolved over time. After marked improvements since 2015/16 from 54% to 75% in 2020/21, this indicator has remained at the same level in the year under review.[315] Coordination between the BNNC and SUN platforms have improved. As a result of the BNNC's increased role and the establishment of decentralised multisectoral nutrition committees at district and sub-district levels, in-country coordination has improved. Nutrition focal points have been identified in 22 nutrition relevant ministries and agencies and regular meetings are held. The SUN Business Network (SBN) and SUN Network for Academia have been successfully established. A National Nutrition Week and a Nutrition Olympiad were once again successfully organised in 2020.

The Right to Food to be enshrined in law

The CIP2 states that the Right to Food -inclusive of nutrition- needs to be included as a fundamental principle of State policy to improve FNS governance by clarifying roles and obligations and increasing accountability. The Constitution guarantees the Right to Food but this right is not legally established. NGOs such as Right to Food Bangladesh are pushing for this as the country prepares to become a middle-income

[315] SUN Scaling up Nutrition (SUN) Movement (2019) *Progress Report 2019 - Nourishing people and planet together*.

country. While the availability of food of diverse types has unquestionably progressed, a substantial portion of the population remains poor and thus vulnerable to hunger and malnutrition. Factors such as weather-related shocks and disasters and the effects of global warming can rapidly push another important section of the population into hunger and malnutrition. Existing social safety nets are not yet entirely able to manage this situation and/or to timely respond to the effects of such shocks (see Programme IV.1), hence the importance of ensuring a Right to Food.

8.4.2. Policy development, programmes and initiatives underway

This programme represents just 0.6% of the total CIP2 budget at 59.7 million USD. It is mostly almost entirely funded (97%) by DPs. The GoB/World Bank Modern Food Storage Facilities Project (MFSP) project component pertaining to this programme accounts for 39% of its entire budget. This is followed by the GoB/ World Bank Strengthening of the Ministry of Disaster Management and Relief programme administration project which accounts for 22% of this programme's budget. A Cabinet Division project - Platforms for Dialogue-Strengthening Inclusion and Participation in Decision Making and Accountability Mechanisms (12% of the programme's budget) has been added since the last monitoring report given its pertinence to improving FNS governance and capacity strengthening and leadership across FNS relevant stakeholders.

Continuous extension of the Bangladesh SUN Business network

The Bangladesh SUN Business Network (SBN) currently brings together 15 members. Its priorities are to convene business with multi-stakeholder partners; to inform business to integrate nutrition into core business model and facilitate partnerships for strengthening the capacity of the private sector; and to improve the enabling environment for influencing food system for a healthier diet. An independent global evaluation of the SBN's progress in 2019[316] concluded that the SBN model was not always clearly operationalised at the national level. But overall, it is agreed that without SBN there would be a limited organisation of business around nutrition in low- and middle-income countries.

Formulation of the new National Food and Nutrition Security Policy (FNSP) 2020

The National Food and Nutrition Security Policy of Bangladesh (NFNSP-2020) was approved by the Cabinet in August 2020, takes into account the increasing role of the private sector in food production, processing and marketing, the importance of partnerships, multisectoral convergence, and enabling role of policymakers. The NFNSP also recognises the relevant direct role of the public sector in areas such as procurement and management public food stock for price stabilisation and social security, hygiene and sanitation, BCC and in partnership with the private sector, on investment in agricultural infrastructure, nutrient-dense product development, food fortification/bio-fortification, and on other specific initiatives of agricultural research and development.This was made possible by the facilitation by FPMU of consultations with IFPRI, the Agricultural Policy Support Unit (APSU)-MoA, BNNC, IPH, NGOs and the TWGs.

8.4.3. Needs for further actions under this programme

Confirm satisfactory capacities to ensure policy alignment and results monitoring

Commitments made in policy and strategic documents must be executed and alignment with policy planning and investment monitoring-related work plans of line ministries ensured. For this, gaps in capacities – especially analytical capacities- among all NFNSP implementing ministries/agencies of the

[316] Mokoro (2019) *SUN Business Network Evaluation 2019.* Commissioned by GAIN.

GoB must be filled. Coordination with local government authorities and non-state actors, including the private sector is also crucial and needs to be improved through knowledge and technology transfer.

Familiarise capacities to the changing FNS landscape

There is a need for continuous capacity strengthening to analyse the ever-evolving FNS landscape with changes and updates in rules, regulations, strategies and policies. Such context requires versatility, notably from FPMU which provides technical and operational support to the institutions tasked with monitoring the CIP2 as well as the SDGs relevant to FNS and the upcoming NFNSP in a unified framework, namely the Thematic Teams (TTs), the Technical Working Groups (TWGs), the expanded FPWG and the National Committee (NC), under the FPMC. Such flexibility to understand and the ability to monitor and analyse these changes require continuous updating of capacities.

Consider the possibility of adopting nutrition-sensitive budgeting and financing

The GoB, as part of its national budget activities, currently carries out gender, poverty and child responsive budgeting. It now also conducts climate-sensitive budgeting[317] that highlight the climate vulnerabilities of the country and looks at the pattern of resource allocation in line with the climate change strategies, policies and plans. The Bangladesh Public Expenditure Review on Nutrition was a one-off exercise to look at the level and composition of public expenditure in nutrition for over four years (see Programme V.3.). A nutrition-sensitive approach to budgeting and financing should be adopted to improve the FNS of the country.

[317] GoB (2019) *Climate Financing for Sustainable Development- Budget Report 2019-2020.* Ministry of Finance. Finance Division.

Annexes

1. Results indicators

Goal Indicators

n	CIP2
1	SDG Indicator 2.1.1: Prevalence of undernourishment
2	SDG Indicator 2.2.1: Prevalence of stunting (height for age <-2 SD from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age
3	SDG Indicator 2.2.2: Prevalence of wasting among children under 5 years of age (<-2 SD of weight for height)
	SDG Indicator 2.1.2: Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
	SDG Indicator 2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
	SDG Indicator 2.3.2 Average income of small-scale food producers, by sex and indigenous status
	SDG Indicator 2.4.1 Proportion of agricultural area under productive and sustainable agriculture

Outcome indicators

Pillar	n.	CIP2
I. Diversified and sustainable agriculture, fisheries and livestock for healthy diets	1	PoA- CIP1: Rice import dependency (import/availability)
	2	7FYP: Agricultural sector GDP growth rate (%) a) Crop and horticulture b) Fisheries c) Livestock
	3	PoA- CIP1: Share of rice value added in total food value added in current price
	4	PoA- CIP1: Wage differential between males and females in agriculture
II. Efficient and nutrition-sensitive post-harvest transformation and value addition	5	7FYP: Average annual CPI inflation rate
	6	Change in without food agricultural wage rate of male agricultural labour
	7	SDG 2.c.1: Change in Food Price Anomalies
III. Improved dietary diversity, consumption and utilisation	8	PoA-CIP1: National dietary energy intake from cereals (%)
	9	PoA-CIP1: Proportion of children receiving minimum acceptable diet at 6-23 months of age (%)
	10	PoA-CIP1: Proportion of households consuming adequately iodised salt containing at least 15 ppm
	11	Prevalence of anaemia among women of reproductive age (15-49)
	12	Minimum Dietary Diversity (MDD) for women
IV. Enhanced access to social protection and safety nets and increased resilience	13	7FYP: Proportion of population living below national poverty line, differentiated by urban and rural (SDG Indicator 1.2.1: Proportion of population living below the national poverty line, by sex and age)
	14	Proportion of population under national extreme poverty line (a) Rural and (b) Urban
V. Strengthened enabling environment and cross-cutting programmes for achieving food and nutrition security	15	GoB financial commitments to CIP2
	16	Establishment of high-level FNS focal points across core ministries
	17	Process of establishment of FNS focal points engaged in policy monitoring is on-going through regular TT and TWG meetings
	18	Annual high level FNS policy reports produced

Output indicators

Investment programme	n	CIP2
I.1 Sustainable intensification and diversification of crop-based production systems	1	7FYP: % of agriculture budget allocated in the agricultural research
	2	PoA- CIP1: Annual change in major crops' production
	3	Direct gender budgeting as % of MoA budget (revised)
	4	PoA- CIP1: Number of improved new varieties released
	5	Production of seeds tolerant to salinity, drought and water submergence in MT
	6	PoA- CIP1: Number of farmers trained on sustainable agriculture practices by DAE
	7	Number of institutions delivering nutrition training across core ministries
I. 2. Improved access, quality and management of crop agricultural inputs, including water and land	8	PoA- CIP1: Annual change in improved rice, wheat and maize seeds production
	9	PoA- CIP1: Improved seeds supply (BADC, DAE & private companies) as % of agronomic requirements
	10	Number of soil samples analysed to upazilla and union levels
	11	Arable land increased by expansion of minor irrigation coverage by encouraging optimal use of surface water, and increasing the area of arable land by reducing water logging and submergence in thousand ha
	12	Direct gender budgeting as % of MoWR budget (revised)
	13	PoA- CIP1: Supply of urea as % of estimated requirements
	14	PoA- CIP1: Supply of MoP as % of estimated requirements
	15	PoA- CIP1: Supply of TSP as % of estimated requirements
	16	PoA- CIP1: Agricultural credit disbursement in billion BDT
	17	Number of samples of fish feed tested for quality assurance
	18	Area of land affected by salinization
	19	Area of land under organic farming under DAE initiative
		SDG indicator 5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure
		SDG indicator 6.4.1 Change in water-use efficiency over time
		SDG indicator 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
	20	7FYP: Percentage of (a) coastal and (b) marine areas that are protected

I.3. Enhanced productivity and sustainable production of animal source foods	21	7FYP: Percentage of wetland and natural sanctuaries maintained
	22	PoA- CIP1: Annual change in quantity of fish production
	23	PoA- CIP1: Fishery exports: a) value as % of total export; b) of which shrimp share in %
	24	PoA- CIP1: GDP from fishery sector as % of agriculture GDP (excluding forest), at constant prices 2005/06
	25	PoA- CIP1: Production of eggs (million), milk, (MT) cattle and meat (MT)
	26	PoA- CIP1: GDP from livestock sector as % of agriculture GDP (excluding forest), at constant prices 2005/06
	27	Growth rate of livestock GDP
	28	Number of doses of vaccines produced
	29	PoA- CIP1: Annual change in artificial insemination
	30	Number of farmers trained by the DoF and DLS
	31	Direct gender budgeting as % of MoFL budget (revised)
	32	Number of commercial registered (1. Poultry; 2. Livestock; 3. Fish farms)
	33	Number of ponds
		SDG 14.2.1 indicator Proportion of national exclusive economic zones managed using ecosystem-based approaches
II.1 Strengthened post-harvest value chain with particular focus on MSMEs (storage, processing, branding, labelling, marketing and trade)	34	Number of large establishments manufacturing food
	35	Number of medium, small and micro establishments manufacturing food
	36	PoA- CIP1: Difference between farm gate and retail price of selected goods
	37	Food and beverages exported in million BDT
	38	Coverage of agro-business entrepreneurship training by the Ministry of Agriculture and the Ministry of Industries (BSCIC), in thousands
II.2. Improved access to markets, facilities and information	39	7FYP: Upazilla and union road network in good and fair condition (SDG 9.1.1 indicator Proportion of the rural population who live within 2 km of an all-season road)
	40	Number of growth centres, rural markets, women market centres, and Union Parishad Complexes developed by LGED and DAM
	41	Cold storage available in thousand MT
	42	Number of Digital Centres across the country at national and sub-national levels

	43	Number of food, market and infrastructure PPP contracts awarded (2015) by the PPP authority
III.1. Enhanced nutrition knowledge, promotion of good practices, and consumption of safe and nutritious diets	45	7FYP: Proportion of children under 6 months who are exclusively breastfed (%)
	46	PoA- CIP1: Share of total dietary energy supply for consumption a) from cereal; and b) non-cereal
	47	Direct gender budgeting as % of MoFood budget
	48	PoA- CIP1: Poor households raising home gardening and backyard poultry in selected vulnerable districts
	49	Prevalence of diabetic cases (%)
	50	PoA- CIP1: Number of mass media activities for nutrition behavioural change communication (BCC)
	51	Number of institutions promoting dietary guidelines
III.2. Optimised food utilisation through provision of safe water, improved food hygiene and sanitation	52	7FYP: Percentage of urban and rural population with access to safe drinking water (a. Urban, b. Rural) [SDG indicator 6.1.1 Proportion of population using safely managed drinking water services]
	53	7FYP Percentage of urban and rural population with access to sanitary latrines (a. Urban, b. Rural) [SDG indicator 6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water]
	54	Number of children aged 5 years or less admitted in upazilla health complexes, at the district-level secondary hospitals and in medical college hospitals for diarrhoea and gastroenteritis of infectious origin
IV.1. Timely and effective disaster preparedness and responses through emergency food distribution, steps towards agricultural sector rehabilitation and mitigation measures	55	7FYP: No. of usable cyclone shelters
	56	7FYP: Number of rural communities with disaster resilient habitats and communities' assets
	57	Month of adequate household food provisioning
	58	Direct gender budgeting as % of MoDMR budget
	59	PoA- CIP1: Effective grain storage capacity at close of fiscal year
	60	PoA- CIP1: Average use of effective GoB foodgrain storage capacity
	61	Actual closing stocks % of budget target
	62	Environment CIP: Early warning information enhanced through Regional and Global Initiatives (MoUs and LoAs)
	63	PoA- CIP1: Budgeted coverage of VGF (lakh person) and VGD (lakh person month)

IV.2. Strengthened social protection and safety net programmes for targeted groups across the life cycle including disabled and displaced population	64	PoA- CIP1: Quantity of VGF and GR distributed (in thousand MT)
	65	PoA- CIP1: Safety net programmes expenditures as % of GDP [SDG indicator 1.3.1. Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, new-borns, work injury victims and the poor and the vulnerable]
	66	Number of children covered by the School Feeding Programs in Poverty Prone Areas (in tens of thousands)
	67	Coverage of people covered by the Allowance for the Financially Insolvent Disabled (in tens of thousands)
	68	Coverage of Old Age Allowance/Pension (in tens of thousands)
	69	Budgeted coverage of employment generation programme for the poor (in lakh person month)
V.1. Improved food safety, quality control and assurance, awareness on food safety and hygiene	70	7FYP: Percentage of urban solid waste regularly collected
	71	Farmers trained on use of organic fertiliser, green fertiliser and microbial fertiliser, in thousands
	72	Number of food safety management system certificates awarded by BSTI
	73	Number of food items standardised by BSTI
	74	Identified number of violations of food safety standard reported by BFSA
	75	Number of HACCP/ISMS certified institutions
	76	Number of courses delivered on GAP, GHP and GMP
	77	Number of trainees that have benefited from training on GAP, GHP and GMP
	78	Number of food safety initiatives /days observed
V.2. Reduced food losses and waste	79	Wastage as a proportion of agricultural produce, including sector specific proportions in Bangladesh
V.3. Improved information and data for evidence-based monitoring and adjustment of policies and programmes	80	PoA- CIP1: Existing food security and nutrition databases/ surveillance systems
	81	PoA- CIP1: Food Composition Tables (FCT) updated/ disseminated
V.4. Strengthened FNS governance,	82	PoA- CIP1: CIP Monitoring Reports produced
	83	PoA- CIP1: Additional resources mobilised for the CIP2 in million USD

capacity strengthening and leadership across FNS relevant stakeholders	84	PoA- CIP1: Increase in ongoing projects (number and value)
	85	SUN index for 'Bringing people together into a shared space for action'
	86	Right to Food issues discussed by policy makers and at Parliamentary level

Annex 2. Composition of the Thematic Team

Thematic Teams (TT)		Ministry/ department/ unit
TT A **Diversified & Sustainable Agriculture, Fisheries & Livestock**	1	FPMU, Ministry of Food
	2	Ministry of Agriculture
	3	Ministry of Fisheries & Livestock
	4	Ministry of Industries
	5	Ministry of Water resources
	6	Department of Agricultural Extension
	7	Department of Fisheries
	8	Department of Livestock Services
	9	Bangladesh Chemical Industries Corporation
	10 - 12	FPMU, Ministry of Food
TT B **Efficient & Nutrition-Sensitive Post-Harvest Transformation & Value Chain**	13	FPMU, Ministry of Food
	14	Ministries of Industries
	15	Ministry of Agriculture
	16	Ministry of Fisheries & Livestock
	17	Ministry of Environment, Forest & Climate Change
	18	Local Government Division

	19	Ministry of Local Government, Rural Development & Co-operatives Division
	20	Bangladesh Standard & Testing Institute, BSTI
	21	Department of Agricultural Marketing, DAM
	22 -23	FPMU, Ministry of Food
	24	Ministry of Food
TT C **Improved Dietary Diversity, Consumption & Nutrition**	25	FPMU, Ministry of Food
	26	Ministry of Food
	27	Ministry of Primary & Mass Education
	28	Ministry of Women & Children Affairs
	29	Health Services Division, MoHFW
	30	Local Government Division
	31	Ministry of Local Government, Rural Development & Co-operatives Division
	32	Bangladesh National Nutrition Council, BNNC
	33	Department of Public Health Engineering, DPHE
	34	Institute of Public Health & Nutrition, IPHN
	35	INFS, University of Dhaka
	36 - 37	FPMU, Ministry of Food
TT D **Enhanced Access to Social Protection, Safety Nets & Increased Resilience**	38	FPMU, Ministry of Food
	39	Ministry of Food
	40	Cabinet Division
	41	Ministry of Women & Children Affairs, MoWCA
	42	Finance Division, Ministry of Finance

	43	Ministry of Disaster Management & Relief
	44	Ministry of Primary & Mass Education
	45	Ministry of Social Welfare
	46	Local Government Division, MoLGRD&C
	47	General Economic Division
	48	Departments of Food
	49	Bangladesh National Nutrition Council (BNNC)
	50	FPMU, Ministry of Food
TT E **Cross Cutting Issues of Nutrition-Sensitive Food System & Strategies**	51	FPMU, Ministry of Food
	52	GED, Planning Commission
	53	Finance Division, Ministry of Finance
	54	ERD, Ministry of Finance
	55	Ministry of Environment, Forest & Climate Change
	56	Local Government Division, MoLGRD&C
	57	Bangladesh Bureau of Statistics (BBS)
	58	Bangladesh Food Safety Authority (BFSA)
	59	Bangladesh Accreditation Board (BAB)
	60	Institute of Public Health (IPH)
	61	Department of Public Health Engineering
	62 - 64	FPMU, Ministry of Food